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THE JOURNAL  
OF  
MENTAL SCIENCE.

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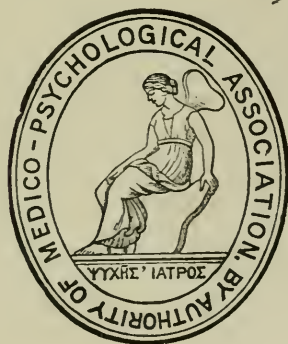
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J. & A. CHURCHILL,

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MDCCCXVII.

"In adopting our title of the *Journal of Mental Science*, published by authority of the Medico-Psychological Association, we profess that we cultivate in our pages mental science of a particular kind, namely, such mental science as appertains to medical men who are engaged in the treatment of the insane. But it has been objected that the term mental science is inapplicable, and that the term mental physiology or mental pathology, or psychology, or psychiatry (a term much affected by our German brethren), would have been more correct and appropriate; and that, moreover, we do not deal in mental science, which is properly the sphere of the aspiring metaphysical intellect. If mental science is strictly synonymous with metaphysics, these objections are certainly valid; for although we do not eschew metaphysical discussion, the aim of this JOURNAL is certainly bent upon more attainable objects than the pursuit of those recondite inquiries which have occupied the most ambitious intellects from the time of Plato to the present, with so much labour and so little result. But while we admit that metaphysics may be called one department of mental science, we maintain that mental physiology and mental pathology are also mental science under a different aspect. While metaphysics may be called speculative mental science, mental physiology and pathology, with their vast range of inquiry into insanity, education, crime, and all things which tend to preserve mental health, or to produce mental disease, are not less questions of mental science in its practical, that is in its sociological point of view. If it were not unjust to high mathematics to compare it in any way with abstruse metaphysics, it would illustrate our meaning to say that our practical mental science would fairly bear the same relation to the mental science of the metaphysicians as applied mathematics bears to the pure science. In both instances the aim of the pure science is the attainment of abstract truth; its utility, however, frequently going no further than to serve as a gymnasium for the intellect. In both instances the mixed science aims at, and, to a certain extent, attains immediate practical results of the greatest utility to the welfare of mankind; we therefore maintain that our JOURNAL is not inaptly called the *Journal of Mental Science*, although the science may only attempt to deal with sociological and medical inquiries, relating either to the preservation of the health of the mind or to the amelioration or cure of its diseases; and although not soaring to the height of abstruse metaphysics, we only aim at such metaphysical knowledge as may be available to our purposes, as the mechanician uses the formularies of mathematics. This is our view of the kind of mental science which physicians engaged in the grave responsibility of caring for the mental health of their fellow-men may, in all modesty, pretend to cultivate; and while we cannot doubt that all additions to our certain knowledge in the speculative department of the science will be great gain, the necessities of duty and of danger must ever compel us to pursue that knowledge which is to be obtained in the practical departments of science with the earnestness of real workmen. The captain of a ship would be none the worse for being well acquainted with the higher branches of astronomical science, but it is the practical part of that science as it is applicable to navigation which he is compelled to study."—Sir J. C. Bucknill, M.D., F.R.S.

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- 1868. W. H. O. Sankey, M.D., Sandywell Park, Cheltenham.
- 1869. T. Laycock, M.D., Edinburgh.
- 1870. Robert Boyd, M.D., County Asylum, Wells.
- 1871. Henry Maudsley, M.D., The Lawn, Hanwell.
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- 1873. Harrington Tuke, M.D., Manor House, Chiswick.
- 1874. T. L. Rogers, M.D., County Asylum, Rainhill.



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 1879. J. A. Lush, M.D., Fisherton House, Salisbury.  
 1880. G. W. Mould, M.R.C.S., Royal Asylum, Cheadle.  
 1881. D. Hack Tuke, M.D., London.  
 1882. Sir W. T. Gairdner, M.D., Glasgow.  
 1883. W. Orange, M.D., State Criminal Lunatic Asylum, Broadmoor.  
 1884. Henry Rayner, M.D., County Asylum, Hanwell.  
 1885. J. A. Eames, M.D., District Asylum, Cork.  
 1886. Geo. H. Savage, M.D., Bethlem Royal Hospital.  
 1887. Fred. Needham, M.D., Barnwood House, Gloucester.  
 1888. T. S. Clouston, M.D., Royal Edinburgh Asylum.  
 1889. H. Hayes Newington, M.R.C.P., Ticehurst, Sussex.  
 1890. David Yellowlees, M.D., Gartnavel Asylum, Glasgow.  
 1891. E. B. Whitcombe, M.R.C.S., City Asylum, Birmingham.  
 1892. Robert Baker, M.D., The Retreat, York.  
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 1895. David Nicolson, M.D., C.B., State Criminal Lunatic Asylum, Broadmoor.  
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 1897. Thomas W. McDowall, M.D., Morpeth, Northumberland.  
 1898. A. R. Urquhart, M.D., James Murray's Royal Asylum, Perth.  
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 1902. J. Wigglesworth, M.D., F.R.C.P., Rainhill Asylum, near Liverpool.  
 1903. Ernest W. White, M.B., City of London Asylum, Dartford, Kent.  
 1904. R. Percy Smith, M.D., F.R.C.P., 36, Queen Anne Street, Cavendish Square, London, W.  
 1905. T. Outterson Wood, M.D., F.R.C.P., 40, Margaret Street, Cavendish Square, London, W.  
 1906. Robert Jones, M.D., Claybury Asylum, Woodford Bridge, Essex.

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1896. Allbutt, T. Clifford, M.D., F.R.C.P., Regius Professor of Physic, Univ. Camb., St. Radegund's, Cambridge.  
 1881. Benedikt, Prof. M., Franciskaner Platz 5, Vienna.  
 1900. Blumer, G. Alder, M.D., L.R.C.P. Edin., Butler Hospital, Providence, U.S.A. (*Ord. Mem.*, 1890.)  
 1900. Bresler, Johannes, M.D., Kraschnitz, Schlesien, Germany. (*Corr. Mem.*, 1896.)  
 1881. Brosius, Dr., Bendorf-Sayn, near Coblenz, Germany.  
 1876. Browne, Sir J. Crichton-, M.D. Edin., F.R.S., Lord Chancellor's Visitor, New Law Courts, Strand, W.C. (*PRESIDENT*, 1878.)  
 1902. Brush, Edward N., M.D., Sheppard and Enoch Pratt Hospital, Towson, Maryland, U.S.A.  
 1887. Chapin, John B., M.D., Pennsylvania Hospital for the Insane, Philadelphia, U.S.A.  
 1902. Coupland, Sidney, M.D., F.R.C.P. Lond., Commissioner in Lunacy, 16, Queen Anne Street, Cavendish Square, London, W.  
 1872. { Courtenay, E. Maziere, A.B., M.B., C.M.T.C.D., M.D., Inspector of  
 1891. { Lunatics in Ireland, Lunacy Office, Dublin Castle. (*Secretary for Ireland*, 1876-87.)  
 1879. Echeverria, M. G., M.D.

1892. Féré, Dr. Charles, 22, Avenue Bugeaud, XVI<sup>e</sup> Arrt., Paris.  
 1895. Ferrier, David, M.D., 34, Cavendish Square, London.  
 1872. Fraser, John, M.B., C.M., F.R.C.P.E., Commissioner in Lunacy, 19, Strathearn Road, Edinburgh.  
 1868. } Gairdner, Sir William T., K.C.B., M.D. Edin., F.R.S., formerly Professor  
 1888. } of Medicine in the University of Glasgow, Physician to H.M. the King  
           in Scotland, 32, George Square, Edinburgh. (PRESIDENT, 1882.)  
 1898. Hine, George T., F.R.I.B.A., 35, Parliament Street, London, S.W.  
 1881. Hughes, C. H., M.D., St. Louis, Missouri, United States.  
 1887. Lentz, Dr., Asile d'Aliénés, Tournai, Belgique.  
 1898. MacDonald, A. E., M.D., Columbia Court, 431, Riverside Avenue, cor.  
       115th Street, New York, U.S.A.  
 1898. Maguan, V., M.D., Asile de Ste. Anne, Paris.  
 1866. } Mitchell, Sir Arthur M.D. Aberd., LL.D., K.C.B., late Commissioner in  
 1871. } Lunacy for Scotland; 34, Drummond Place, Edinburgh.  
 1897. Morel, M. Jules, M.D., States Lunatic Asylum, Mons, Belgium.  
 1880. Motet, M., 161, Rue de Charonne, Paris.  
 1889. Needham, Frederick, M.D. St. Aud., M.R.C.P. Edin., M.R.C.S. Eng.,  
       Commissioner in Lunacy, 19, Campden Hill Square, Kensington,  
       W. (PRESIDENT, 1887.)  
 1891. O'Farrell, Sir G. P., M.D., M.Ch. Univ. Dubl., Inspector of Lunatics in  
       Ireland, 19, Fitzwilliam Square, Dublin.  
 1881. Peeters, M., M.D., Gheel, Belgium.  
 1873. Pitman, Sir Henry A., M.D. Cantab., F.R.C.P. Lond., Registrar of the  
       Royal College of Physicians, Enfield, Middlesex.  
 1900. Ritti, Ant., Maison Nationale de Charenton, St. Maurice, Paris. (*Corr.*  
       *Mem.*, 1890.)  
 1887. Schüle, Heinrich, M.D., Illenau, Baden, Germany.  
 1881. Tamburini, A., M.D., Reggio-Emilia, Italy.  
 1901. Toulouse, Dr. Edouard, Directeur du Laboratoire de Psychologie experi-  
       mentale à l'Ecole des Hautes Etudes Paris et Médecin en chef de  
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 1904. Tuke, Sir John Batty, M.D., M.P., 20, Charlotte Square, Edinburgh.

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 1902. Estense, Benedetto Giovanni Selvatico, M.D., 116, Piazza Porta Pia, Rome.  
 1904. Koenig, William Julius, Deputy Superintendent, Dalldorf Asylum, Berlin.  
 1880. Kornfeld, Dr. Hermann, Gleiwitz, Silesia, Germany.  
 1889. Kowalowsky, Professor Paul, Kharkoff, Russia.  
 1895. Lindell, Emil Wilhelm, M.D., Sweden.  
 1901. Manheimer-Gommès, Dr., 32, Rue de l'Arcade, Paris.  
 1897. Nücke, Dr. P., Hubertusberg Asylum, Leipzig.  
 1886. Parant, M. Victor, M.D., Toulouse.  
 1890. Régis, Dr. E., 54, Rue Huguerie, Bordeaux.  
 1893. Semelaigne, Dr. René, Secrétaire des Séances de la Société Médico-  
       Psychologique de Paris, 16, Avenue de Madrid, Neuilly, Seine, France.

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1900. Abbott, Henry Kingsmill, M.D.Dublin, D.P.H.Ireland. Hants County Asylum, Fareham.
1891. Adair, Thomas Stewart, M.D., C.M.Edin., Storthes Hall Asylum, Kirkburton, near Huddersfield.
1868. Adams, Josiah O., M.D.Durh., F.R.C.S.Eng., Brooke House, Upper Clapton, London.
1886. Agar, S. Hollingsworth, jun., B.A.Cantab., M.R.C.S., Hurst House, Henley-in-Arden.
1901. Ahern, John M., M.B., B.Ch., L.R.C.P.&S.I., Assistant Medical Officer, 18, Walton Park, Liverpool.
1905. Alcock, Benjamin James, M.B.Aberd., Ch.B., James Murray's Royal Asylum, Perth.
1869. Aldridge, Chas., M.D.Aber., L.R.C.P., Plympton House, Plympton, Devon.
1905. Alexander, Edward Henry, M.B., M.R.C.S., Physician Superintendent, Ashbourne Hall Asylum, Dunedin, New Zealand.
1899. Alexander, Hugh de Meine, M.D., The Hospital, Royal Asylum, Aberdeen.
1890. Alexander, Robert Reid, M.D.Aber., 19, Leinster Square, Bayswater.
1905. Allen, Robert George, L.R.C.P.&S.I., Burbury Street, Lozell, Birmingham.
1882. Alliot, A. J., M.D., Rosendal, Sevenoaks.
1899. Allmann, Dorah Elizabeth, M.B., B.Ch., B.A.O.R.U.I., Assistant Medical Officer, District Asylum, Armagh.
1885. Amsden, Geo., M.B., Medical Supt., County Asylum, Brentwood, Essex.
1900. Anderson, John Sewell, M.R.C.S., L.R.C.P., Hull City Asylum, Willerby, near Hull.
1901. Anderson, William C., M.B., C.M., 15, King Street, Dundee, N.B.
1904. Archdale, Mervyn Alex., M.B., B.S.Dur., East Riding Asylum, Beverley, Yorks.
1905. Archdall, Mervyn Thomas, L.S.A.Lond., L.R.C.P.&S.Edin., Resident Licensee, Bishopstone House, Bedford.
1891. Aveline, Henry T. S., M.R.C.S., L.R.C.P., M.P.C., Medical Superintendent, County Asylum, Cotford, near Taunton, Somerset. (*Hon. Sec. for S.W. Division since 1905.*)
1903. Bailey, William Henry, M.B., M.R.C.S., L.S.A., Featherstone Hall, Southall, Midd.
1894. Baily, Percy J., M.B.Edin., Medical Superintendent, London County Asylum, Hanwell, W.
1906. Baird, Harvey, M.D., Ch.B.Edin., Assistant Medical Officer, London County Asylum, Colney Hatch.
1878. Baker, H. Morton, M.B.Edin., Assistant Medical Officer, Leicester Borough Asylum, Humberstone, Leicester.
1888. Baker, John, M.D., Deputy Superintendent, State Asylum, Broadmoor, Berks.
1876. Baker, Robert, M.D.Edin., 2, The Crescent, Blossom Street, York. (PRESIDENT, 1892.)
1904. Barham, Gny Foster, M.B., B.A., B.C., M.R.C.S., L.R.C.P., Claybury Asylum, Woodford Bridge, Essex.
1901. Barnett, Horatio, M.B., B.C.Cantab., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Stretton House, Church Stretton, Salop.
1895. Barraclough, Herbert, M.B., The Asylum, Porirua, nr. Wellington, New Zealand.
1878. Barton, James Edward, L.R.C.P.Edin., L.M., M.R.C.S., Medical Superintendent, Surrey County Lunatic Asylum, Brookwood, Woking.
1904. Barton, Samuel J., M.D.Dubl., Physician to the Norfolk and Norwich Hospital, Surrey Street, Norwich.

1901. Baskin, J. Longheed, L.R.C.P.&S.Edin., L.F.P.S.Glas., Fisherton House, Salisbury.
1902. Baugh, Leonard D. H., M.B., C.M., Gartloch Asylum, Gartcosh, Glasgow, N.B.
1864. Bayley, Joseph, M.R.C.S., Medical Superintendent, St. Andrew's Hospital, Northampton.
1893. Bayley, Joseph Herbert, M.B., C.M.Edin., Assistant Medical Officer, St. Andrew's Hospital, Northampton.
1874. Beach, Fletcher, M.B., F.R.C.P.Lond., formerly Medical Superintendent, Darenth Asylum, Dartford; Winchester House, Kingston Hill, Surrey, and 79, Wimpole Street, W. (*General Secretary*, 1889—1896. *PRESIDENT*, 1900.)
1892. Beadles, Cecil F., M.R.C.S., L.R.C.P., The Clergy House, Englefield Green, Surrey.
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1894. Blachford, James Vincent, M.D., B.S.Durham, Medical Superintendent, Bristol Asylum, Fishponds, near Bristol.
1898. Blair, David, M.A., M.D., C.M., County Asylum, Lancaster.
1883. Blair, Robert, M.D., Braefort, Crookston, Paisley.
1904. Blakesley, Henry John, F.R.C.S.Eng., L.R.C.P.Edin., 56, London Road, Leicester.
1857. Blandford, George Fielding, M.D.Oxon., F.R.C.P.Lond., 48, Wimpole Street, W. (*PRESIDENT*, 1877.)
1897. Blandford, Joseph John Guthrie, B.A., D.P.H.Camb., M.R.C.S.Eng., L.R.C.P.Lond., Senior Assistant Medical Officer, County Asylum, Whittingham, Preston, Lancs.
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1900. Bolton, Joseph Shaw, M.D., B.S., B.Sc.Lond., Senior Assistant Medical Officer, County Asylum, Rainhill, Liverpool.
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1877. Bower, David, M.D.Aber., Springfield House, Bedford.
1877. Bowes, John Ireland, M.R.C.S.Eng., L.S.A., Medical Superintendent, County Asylum, Devizes, Wilts.
1893. Bowes, William Henry, M.D.Lond., Assistant Medical Officer, Plymouth Borough Asylum, Ivybridge, Devon.
1900. Bowles, Alfred, M.R.C.S., L.R.C.P., 10, South Cliff, Eastbourne.
1896. Boycott, Arthur N., M.D.Lond., M.R.C.S.Eng., L.R.C.P.Lond., Medical Superintendent, Herts County Asylum, Hill End, St. Albans, Herts. (*Hon. Sec. for S.-E. Division*, 1900-05.)
1898. Boyle, A. Helen A., M.D., 3, Palmeira Terrace, Hove, Brighton.
1883. Boys, A. H., L.R.C.P.Edin., Chequer Lawn, St. Albans.
1891. Braine-Hartnell, George, M. P., L.R.C.P.Lond., M.R.C.S.Eng., Medical Superintendent, County and City Asylum, Powick, Worcester.
1893. Bramwell, John Milne, M.B., C.M.Edin., 33, Wimpole Street, W.
1904. Branthwaite, Robert Welsh, M.D. (Inspector under the Inebriates Act), Home Office Chambers, 55, Whitehall, S.W.
1881. Brayn, R., L.R.C.P.Lond., Medical Superintendent, Broadmoor Asylum, Crowthorne, Berks.
1895. Briscoe, John Frederick, M.R.C.S.Eng., Resident Medical Superintendent, Westbrooke House Asylum, Alton, Hants.



1892. Bristowe, Hubert Carpenter, M.D.Lond., Wrington, R.S.O., Somerset.
1905. Brown, Harry Egerton, M.D., M.P.C., The Asylum, Pretoria, S. Africa.
1904. Brown, Josephine, M.B.Lond., St. Michel Cottages, Glencoe Road, Bushey, Herts.
1893. Bruce, Lewis C., M.D.Edin., Druid Park, Murthly, N.B. (*Hon. Divisional Secretary for Scotland since 1901.*)
- \* Brushfield, Thomas N., M.D.St. And., The Cliff, Budleigh Salterton, Devon.
1896. Bubb, William, M.R.C.S., L.R.C.P.Lond., Senior Assistant Medical Officer, Worcester County Asylum, Powick, near Worcester.
1892. Bullen, Frederick St. John, M.R.C.S.Eng., 12, Pembroke Road, Clifton, Bristol.
1904. Burrell, Arthur Ambrose, M.B., B.Ch., St. Edmundsbury, Lucan, Co. Dublin.
1891. Caldecott, Charles, M.B., B.S.Lond., M.R.C.S., Medical Superintendent, Earlswood Asylum, Redhill, Surrey.
1889. Callcott, James T., M.D., Medical Superintendent, Borough Asylum, Newcastle-on-Tyne.
1874. Cameron, John, M.D.Edin., Medical Superintendent, Argyll and Bute Asylum, Lochgilphead.
1902. Campariele, Paul Clem, M.B., C.M.Ed., Junior Assistant Medical Officer, County Asylum, Melton, Suffolk.
1894. Campbell, Alfred Walter, M.D.Edin., Macquarie Chambers, 183, Macquarie Street, Sydney, New South Wales.
1880. Campbell, Patrick E., M.B., C.M., Medical Superintendent, District Asylum, Caterham.
1897. Campbell, Robert Brown, M.B., C.M.Edin., Medical Superintendent, Inverness District Asylum, Inverness.
1897. Cappe, Herbert Nelson, M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer, Surrey County Asylum, Brookwood.
1905. Carre, Henry, L.R.C.P., L.M., Woodilee Asylum, Lenzie, Glasgow.
1891. Carswell, John, L.R.C.P.Edin., L.F.P.S.Glasg., Certifying Medical Officer, Barony Parish, 5, Royal Crescent, Glasgow.
1896. Cashman, James P., M.B., B.Ch., B.A.O.Royal Univ. Irel., Assistant Medical Officer, Cork District Asylum.
1902. Cassells, Alexander Henderson, M.B., Ch.B.Glasg., 5, Albert Road, Gonrock, N.B.
1874. Cassidy, D. M., M.D., C.M.McGill Coll., Montreal, D.Sc. (Public Health) Edin., F.R.C.S.Edin., Medical Superintendent, County Asylum, Lancaster.
1888. Chambers, James, M.D., The Priory, Roehampton. (*Co-Editor of Journal since 1905, Assistant Editor 1900-05.*)
1865. Chapman, Thomas Algernon, M.D.Glas., L.R.C.S.Edin., Betula, Reigate.
1880. Christie, J. W. Stirling, L.R.C.P.Edin., Medical Superintendent, County Asylum, Stafford.
1878. Clapham, Wm. Crochley S., M.D., F.R.C.P.Ed., The Five Gables, Mayfield, Sussex. (*Hon. Sec. N. and M. Division, 1897-1901.*)
1906. Claque, Henry John, L.R.C.S., L.R.C.P.Edin., Assistant Medical Officer, Glamorgan County Asylum, Bridgend.
1879. Clarke, Henry, M.D.Durh., L.R.C.P.Lond., H.M. Prison, Wakefield.
1901. Cleland, William Lennox, M.B., B.Ch.Edin., Park Side, Adelaide, South Australia.
1862. Clouston, T. S., M.D.Edin., F.R.C.P.Edin., F.R.S.E., Physician Superintendent, Royal Asylum, Morningside, Edinburgh. (*Editor of Journal, 1873-1881.*) (PRESIDENT, 1888.)
1900. Coffey, Patrick, L.R.C.P.&S.I., District Asylum, Maryborough, Queen's Co., Ireland.
1892. Cole, Robert Henry, M.D.Lond., M.R.C.P.Lond., Moorcroft, Hillingdon, Uxbridge.

1900. Cole, Sydney John, M.A., M.D., B.Ch.Oxon., Senior Assistant Medical Officer, Wilts County Asylum, Devizes.
1906. Collen, Edward Victor, M.D., B.Ch., B.A.O.Dubl., Junior Medical Officer, North Riding Asylum, Clifton, York.
1903. Collins, Michael Abdy, M.B., B.S., M.R.C.S. & P.Lond., London County Asylum, Bexley, Kent.
1888. Cones, John A., M.R.C.S., 2, Portland Place, Kemp Town, Brighton.
1895. Conry, John, M.D.Aber., Fort Beaufort Asylum, South Africa.
1878. Cooke, Edward Marriott, M.D., M.R.C.S.Eng., Commissioner in Lunacy, 69, Onslow Square, S.W.
1899. Cooke, J. A., M.R.C.S., L.R.C.P., Medical Officer and Co-Licensee, Tue Brook Villa, near Liverpool.
1905. Cooper, K. D., 482-4, Falkland Road, Tardeo, Bombay, India.
1903. Cormac, Harry Dove, M.B., B.S.Madras, Parkside Asylum, Macclesfield.
1891. Corner, Harry, M.D.Lond., M.R.C.S., L.R.C.P., M.P.C., 37, Harley Street, W.
1905. Cotter, James, L.R.C.P.&S.E., L.F.P.S.Glas., Down District Asylum, Downpatrick.
1897. Cotton, William, M.A., M.D.Edin., D.P.H.Cantab., 231, Gloucester Road, Bishopston, Bristol.
1893. Cowen, Thomas Philip, M.D., B.S.Lond., Assistant Medical Officer, County Asylum, Lancaster.
1884. Cox, L. F., M.R.C.S., Medical Superintendent, County Asylum, Denbigh.
1893. Craig, Maurice, M.A., M.D., B.C.Cantab., M.R.C.P.Lond., Senior Assistant Medical Officer, Bethlem Royal Hospital, Southwark.
1904. Crawford, William Thomson, M.B.Lond., M.R.C.S., L.R.C.P., East Sussex Asylum, Hellingly, Sussex.
1906. Creighton, John Alexander, M.B., C.M., West Riding Asylum, Wakefield.
1897. Cribb, Harry Gifford, M.R.C.S.Eng., L.R.C.P.Lond., Senior Assistant Medical Officer, London County Asylum, Cane Hill, Coulsdon, Surrey.
1898. Crookshank, F. G., M.D.Lond., M.R.C.S., L.R.C.P., 27, The Terrace, Barnes, S.W.
1904. Cross, Harold Robert, L.S.A., Storthes Hall Asylum, Kirkburton, near Huddersfield.
1894. Cullinan, Henry M., L.R.C.P.I., L.R.C.S.I., Senior Assistant Medical Officer, Richmond District Asylum, Dublin.
1904. Cullum, Sydney John, M.B., B.Ch.Dubl., Crichton Royal Institution, Dumfries.
1905. Cummins, Edmund Joseph, L.R.C.P.&S.Edin., Richmond Place, Clonmel, Ireland.
1905. Darbyshire, Harold Stewart C., M.R.C.S.Eng., L.R.C.P.Lond., Grosvenor House, West Ealing, W.
1899. Daunt, Elliot, M.R.C.S., L.R.C.P., D.P.H., The Glen, Bursledon, Hampshire.
1896. Davidson, Andrew, M.D., C.M.Aber., Callan Park, Sydney, N.S.W.
1891. Davis, Arthur N., L.R.C.P., L.R.C.S.Edin., Medical Superintendent, County Asylum, Exminster, Devon.
1894. Dawson, William R., M.D., B.Ch.Dubl., F.R.C.P.I., Medical Superintendent, Farnham House Asylum, Finglas, Dublin. (*Hon. Divisional Sec. for Ireland since 1902.*)
1869. Deas, Peter Maury, M.B. and M.S.Lond., Medical Superintendent, Wonford House, Exeter.
1900. Despard, Rosina C., M.D.Lond., The Dell, Colden Common, Winchester.
1883. De Lisle, Samuel Ernest, L.R.C.P., L.R.C.S.I., Three Counties Asylum, Stotfold, Herts.

1901. De Steiger, Adèle, M.B.Lond., County Asylum, Brentwood, Essex.
1905. Devine, Henry, M.B., B.S., M.R.C.P.Lond., M.R.C.S., London County Asylum, Cane Hill, Coulsdon, Surrey.
1904. Devon, James, L.R.C.P. & S.Edin., 6, Cathedral Square, Glasgow.
1876. Dickson, F. K., F.R.C.P.Edin., Wye House Lunatic Asylum, Buxton, Derbyshire.
1903. Dickson, Thomas Graeme, L.R.C.P. & S.Edin., Assistant Superintendent, Wye House, Buxton.
1905. Dixon, J. Francis, M.D., B.Ch., B.A.O., B.A.Dubl., Three Connties Asylum, Arlesley, Hitchin.
1879. Dodds, William J., M.D., D.Sc.Edin., Valkenburg, Mowbray, near Cape Town, South Africa.
1886. Donaldson, Robert Lockhart, B.A., M.D., B.Ch.Univ. of Dubl., M.P.C., Senior Medical Officer, District Asylum, Monaghan.
1889. Donaldson, William Ireland, B.A., M.D., B.Ch.Univ. of Dubl., Medical Superintendent, County of London Manor Asylum, Epsom, Surrey.
1892. Donelan, John O'Conor, L.R.C.P.I., L.R.C.S.I., M.P.C., Deputy Superintendent, Portrane Asylum, Donabate, co. Dublin.
1899. Donelan, Thomas O'Conor, L.R.C.P. & L.R.C.S.I., Middlesex County Asylum, Napsbury, near St. Albans, Herts.
1890. Douglas, William, M.D.Queen's Univ. Irel., M.R.C.S.Eng., Brandfold, Goudhurst.
1905. Dove, Augustus Charles, M.D.Durh., M.B., B.S., "Brightside," Crouch End Hill, N.
1897. Dove, Emily Louisa, M.B.Lond., The School, Durham.
1903. Dow, William Alex., M.D.Durh., M.R.C.S.&P.Lond., H.M. Prison, Lewes.
1905. Drake-Brockman, Henry George, M.R.C.S., L.R.C.P., Middlesborough Asylum, Cleveland, Yorks.
1884. Drapes, Thomas, M.B., Medical Superintendent, District Asylum, Ennis-corthy, Ireland.
1905. Drew, Charles Milligan, M.A., M.B., Ch.B.Glas., Lt. R.A.M.C.
1902. Dudgeon, Herbert Wm., M.D.Durh., M.R.C.S.Eng., L.R.C.P.Lond., Medical Officer to the Egyptian Asylum, Abassieh, Cairo, Egypt.
1899. Dudley, Francis, L.R.C.P.&S.I., Senior Assistant Medical Officer, County Asylum, Bodmin, Cornwall.
1905. Dunlop, James Craufurd, M.D.Edin., L.R.C.P.Edin., M.R.C.S.E., Superintendent of Statistical Department, H.M. General Registry of Births, Marriages, and Deaths, Scotland, 33, Chester Street, Edinburgh.
1903. Dunston, John Thomas, M.D., B.S.Lond., Senior Assistant Medical Officer, The Asylum, Pretoria.
1899. Eades, Albert I., L.R.C.P. & S.I., North Riding Asylum, Clifton, Yorks.
1903. Eady, George John, M.D., M.R.C.P.Edin., M.R.C.S.Eng., 78, Drayton Gardens, S. Kensington, S.W.
1874. Eager, Reginald, M.D.Lond., M.R.C.S.Eng., Northwoods, near Bristol.
1906. Eager, Richard, M.B., Ch.B.Aber., Assistant Medical Officer, Devon County Asylum, Exminster.
1873. Eager, Wilson, L.R.C.P.Lond., M.R.C.S.Eng., Northwoods, Winterbourne, Bristol.
1881. Earle, Leslie, M.D.Edin., 108, Gloucester Terrace, Hyde Park, W.
1891. Earls, James Henry, M.D., M.Ch., Moyulton, Fairlawn Park, Chiswick, S.W.
1903. East, Guy Rowland, M.B.Durh., 66, St. George's Square, Newcastle-on-Tyne.
1895. Easterbrook, Charles C., M.A., M.D., F.R.C.P.Ed., Medical Superintendent, Ayr District Asylum, Glengail, Ayr, N.B.

1904. Addison, John Edwin, M.D.Ed., 6, Park Square, Leeds.
1895. Edgerley, Samuel, M.D., M.A., C.M.Edin., Assistant Medical Officer, West Riding Asylum, Menston, nr. Leeds.
1900. Edridge-Green, Frederic W., M.D., F.R.C.S., Hendon Grove, Hendon.
1897. Edwards, Francis Henry, M.D.Bru., M.R.C.P.Lond., Medical Superintendent, Camberwell House, S.E.
1901. Elgee, Samuel Charles, L.R.C.P., L.R.C.S.I., London County Asylum, Horton, Epsom, Surrey.
1889. Elkins, Frank Ashby, M.D., Medical Superintendent, Metropolitan Asylum, Leavesden.
1898. Ellerton, Henry B., M.R.C.S., L.R.C.P., Leavesden Asylum, King's Langley R.S.O., Herts.
1873. Elliot, G. Stanley, M.R.C.P.Edin., F.R.C.S.Edin., 31, Belvedere Road, Upper Norwood, S.E.
1890. Ellis, William Gilmore, M.D.Bru., Superintendent, Government Asylum, Singapore.
1899. Ellison, F. C., M.D., B.Ch., T.C.D., Assistant Medical Officer, District Asylum, Castlebar.
1901. Erskine, Wm. J. A., M.D., C.M., Senior Assistant Medical Officer, City Asylum, Nottingham.
1895. Eurick, Frederick Wilhelm, M.D., C.M.Edin., 7, Lindum Terrace, Munningham, Bradford, Yorks.
1894. Eustace, Henry Marcus, M.D., B.Ch., B.A.T.C.D. Assistant Physician, Hampstead and Highfield Private Asylum, Glasnevin, Dublin.
1901. Evans, James Wm., M.R.C.S., L.S.A., Lieut.-Col. Indian Medical Service (retired), East India United Service Club, 16, St. James's Square, S.W., and Martinstown, Dorchester.
1897. Everett, William, M.D., Assistant Medical Officer, County Asylum, Chart-ham Downs, Kent.
1891. Ewan, John Alfred, M.A., M.D., Medical Superintendent, Kesteven County Asylum, Sleaford, Lincs.
1884. Ewart, C. T., M.D., C.M.Aberd., Senior Assistant Medical Officer, Claybury Asylum, Woodford Bridge, Essex.
1906. Ewens, George Francis William, Major I.M.S. Bengal, c/o Messrs. Grindlay & Co., 54, Parliament Street, S.W.
1894. Farquharson, William F., M.D.Edin., Medical Superintendent, Counties Asylum, Garlands, Carlisle.
1901. Fee, Wm. George, L.R.C.P. and L.R.C.S.Edin., Gray's Inn, London, W.C.
1903. Fennell, Charles Henry, M.A., M.D.Oxon, M.R.C.P.Lond., Senior Assistant Medical Officer, East Sussex Asylum, Hellingly, Sussex.
1905. Ferris, William, M.D., B.S.Lond., Middlesex County Asylum, Tooting, S.W.
1897. Fielding, James, M.D., Victoria Univ., Canada, M.R.C.S.Eng., L.R.C.P. Edin., Medical Superintendent, Bethel Hospital, Norwich.
1906. Fielding, Saville James, M.B., B.S.Durh., Bethel Street, Norwich.
1873. Finch, John E. M., M.D., Medical Superintendent, Borough Asylum, Leicester.
1889. Finch, Richard T., B.A., M.B.Cantab., Orchard Stede, Asterberry Road, Wimbledon.
1882. Finegan, A. D. O'Connell, L.R.C.P.I., Medical Superintendent, District Asylum, Mullingar, Ireland. (*Hon. Divisional Sec. for Ireland, 1898-1902.*)
1889. Finlay, David, M.D.Glasg., County Asylum, Bridgend, Glamorgan.
1906. Firth, Arthur Marcus, M.A., M.B., B.Ch.Edin., Wadsley Asylum, near Sheffield.
1903. Fitzgerald, Alexis, L.R.C.P. & S.I., L.M., District Asylum, Waterford.
1894. Fitzgerald, Charles E., M.D., F.R.C.S.I., Surgeon-Oculist to the King in Ireland, 27, Upper Merrion Street, Dublin.



1888. Fitz-Gerald, Gerald C., M.D., B.C.Cantab., M.P.C., Medical Superintendent, Kent County Asylum, Chartham, nr. Canterbury.
1899. Fitzgerald, James J., M.D., B.Ch., B.A.O.R.U.I., Assistant Medical Officer, Cork District Asylum, Carlow.
1901. Fitzgerulld, John J., M.D.Brux., L.R.C.P.&S.Edin., Assistant Medical Officer, District Asylum, Cork.
1904. Fleming, Wilfrid Louis Remi, M.R.C.S., L.R.C.P., Suffolk House, Pirbright, Surrey.
1899. Flemming, Arthur L., M.R.C.S.Eng., L.R.C.P.Lond., 34, Alma Road, Clifton, Bristol.
1894. Fleury, Eleonora Lilian, M.D., B.Ch., R.U.I., Assistant Medical Officer, Richmond Asylum, Dublin.
1902. Forde, Michael J., M.D., M.Ch., R.U.I., Assistant Medical Officer, Richmond Asylum, Donabate, Dublin.
1902. Forster, Hermann Julius, L.R.C.P.I., L.S.A., Assistant Medical Officer, Sussex County Asylum, Hayward's Heath.
1906. Forster, R. A., M.B., Ch.B.Aber., Assistant Physician, Royal Asylum, Aberdeen.
1906. Forsyth, James, M.B., C.M., Glasgow District Asylum, Woodilee, Lenzie, N.B.
1906. Fortune, John, M.B., Ch.B.Edin., Senior Assistant Medical Officer, Devon County Asylum, Exminster.
1861. Fox, Charles H., M.D.St. And., M.R.C.S.Eng., 35, Heriot Row, Edinburgh.
1896. France, Eric, M.B., B.S.Durh., No. 7, First Floor, 6, Church Square, Cape Town, South Africa.
1881. Fraser, Donald, M.D., 3, Orr Square, Paisley.
1906. Fraser, Thomas Peppé, M.B., Ch.B.Aberd., Sunderland Borough Asylum, Ryhope, Sunderland.
1901. French, Louis Alexander, M.R.C.S., L.R.C.P., H.M. Prison, Wakefield, Yorks.
1902. Fuller, Lawrence Otway, M.R.C.S.Eng., L.R.C.P.Lond., The Infirmary, Lewisham, S.E.
1906. Gane, Edward Palmer Steward, M.R.C.S.Eng., L.R.C.P.Lond., Fife and Kinross Asylum, Cupar, Fife.
1904. Garden, W. Sim, M.B., Brankanenthan, Portsoy, N.B.
1893. Garth, Henry C., M.B., C.M.Edin., 36, Chowringee, Calcutta, India.
1890. Gandin, Francis Neel, M.R.C.S., L.S.A., M.P.C., Medical Superintendent, The Grove, St. Lawrence, Jersey.
1906. Gavin, Noel John Hay, M.B., Ch.B.Edin., Norfolk County Asylum, Thorpe, Norfolk.
1885. Gayton, Francis C., M.D., Brookwood Asylum, Woking, Surrey.
1896. Geddes, John W., M.B., C.M.Edin., Medical Superintendent, County Borough Asylum, Berwick Lodge, Middlesbrough, Yorks.
1892. Gemmel, James Francis, M.B.Glasg., Medical Superintendent, County Asylum, Whittingham, Preston.
1904. Gibb, James Alex., M.B., Ch.B., Valkenburg Asylum, near Cape Town, South Africa.
1899. Gilfillan, Samuel James, M.A., M.B.Edin., Senior Assistant Medical Officer, London County Asylum, Colney Hatch.
1889. Gill, Stanley, B.A., M.D., M.R.C.P.Lond., Shaftesbury House, Formby, Lancashire.
1904. Gillespie, Daniel, M.B. (R.U.I.), Wadsley Asylum, near Sheffield.
1897. Gilmour, John Rutherford, M.B., F.R.C.P.Edin., Medical Superintendent, West Riding Asylum, Scalebor Park, Burley-in-Wharfedale, Yorks.
1906. Gilmour, Richard Withers, M.B., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, St. Luke's Hospital, E.C.

1878. Glendinning, James, M.D.Glasg., L.R.C.S.Edin., L.M., Medical Superintendent, Joint Counties Asylum, Abergavenny.
1898. Goldie-Scot, Thomas G., M.B., C.M.Edin., M.R.C.S., L.R.C.P., Junior Assistant Physician, Royal Asylum, Gartnavel, Glasgow.
1897. Good, Thomas Saxty, M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer, County Asylum, Littlemore, Oxford.
1889. Goodall, Edwin, M.D., B.S.Lond., F.R.C.P., Medical Superintendent, City Asylum, Cardiff.
1899. Gordon, James Leslie, M.B., Ch.B., Tooting Bee Asylum, Tooting, London, S.W.
- \* Gordon, William S., M.A., M.B., T.C.D., District Asylum, Mullingar.
1905. Gordon-Munn, John Gordon, M.D., F.R.S.E., Heigham Hall, Norwich.
1901. Gostwyck, C. H. G., M.B., Ch.B., Stirling District Asylum, Larbert.
1899. Graham, Robert A. L., B.A., M.B., B.Ch., R.U.I., Assistant Medical Officer, District Asylum, Belfast.
1894. Graham, Samuel, L.R.C.P.Lond., Assistant Medical Officer, District Asylum, Antrim.
1888. Graham, Thomas, M.D.Glasg., 3, Garthland Place, Paisley.
1887. Graham, William, M.D., R.U.I., Medical Superintendent, District Lunatic Asylum, Belfast.
1886. Greenlees, T. Duncan, M.D., Medical Superintendent to the Grahams-town Asylum, Cape of Good Hope.
1904. Griffin, Ernest Harrison, B.A.Cantab., L.S.A.Lond., Camberwell House, Peckham Road, S.E.
1901. Grills, Galbraith Hamilton, M.D., B.Ch., Assistant Medical Officer, County Asylum, Chester.
1900. Grove, Ernest George, M.R.C.S., L.R.C.P., Bootham Park, York.
1894. Gwynn, Charles Henry, M.D.Edin., co-Licencee, St. Mary's House, Whitchurch, Salop.
1905. Hallett, H. G., M.R.C.S., L.R.C.P.Lond., Darenth Asylum, Dartford, Kent.
1894. Halstead, Harold Cecil, M.D.Durh., Assistant Medical Officer, Peckham House, Peckham.
1903. Hanbury, Langton Fuller, M.R.C.S.Eng., L.R.C.P.Lond., West Ham Borough Asylum, Ilford, Essex.
1902. Hanbury, Saville Waldron, M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer, London County Asylum, Banstead, Surrey.
1896. Hanbury, William Reader, M.R.C.S., L.R.C.P., Senior Assistant Medical Officer, West Ham Borough Asylum, Goodmayes, Ilford.
1903. Hankin, Chella Mary, M.B.Durh., Borough Asylum, Portsmouth.
1901. Harding, William, M.D., M.R.C.P.Lond., Medical Superintendent, Northampton County Asylum, Berry Wood, Northampton.
1906. Harman, George James, L.R.C.P.&S.Edin., L.F.P.S.Glasg., Assistant Medical Officer, Cornwall County Asylum, Bodmin.
1899. Harner, W. A., L.S.A., Resident Superintendent and Licensee, Redlands Private Asylum, Tonbridge, Kent.
1904. Harper-Smith, George Hastie, M.R.C.S., L.R.C.P., B.A.Cantab., 102, Huntingdon Road, Cambridge.
1897. Harris, William, M.D.St. And., F.R.C.S.Edin., M.R.C.P.Edin., c/o Dr. W. T. Harris, 1, The Bourne, Bolton Gardens, High Street, Chiswick.
1898. Harris-Liston, L., M.D., M.R.C.S., L.R.C.P.Lond., L.S.A., Middleton Hall, Middleton St. George, Co. Durham.
1905. Hart, Bernard, M.B.Lond., M.R.C.S.Eng., Herts County Asylum, Hill End, St. Albans, Herts.
1886. Harvey, Bagenal Crosbie, L.R.C.P., L.R.C.S., Assistant Medical Officer, District Asylum, Clommel.

1892. Haslett, William John, M.R.C.S., L.R.C.P., Resident Medical Superintendent, Halliford House, Sunbury-on-Thames.
1891. Havelock, John G., M.D., C.M.Edin., Physician Superintendent, Montrose Royal Asylum.
1890. Hay, Frank, M.B., C.M., Physician Superintendent, Ashburn Hall Asylum, Dunedin, New Zealand.
1900. Haynes, Horace E., M.R.C.S., L.S.A., 32, Brunswick Terrace, Hove, Sussex.
1895. Header, Frederic P., M.D., C.M., Medical Superintendent, Yorkshire Inebriate Reformatory, Cattal, Whixley, near York.
1905. Hector, George W. K., M.D., L.R.C.P.&S.
1903. Heffernan, Patrick, M.B., B.Ch., B.A.O., R.U.I., Rathkenny, Fethard, co. Tipperary.
1905. Henderson, George, M.A., M.B., Medical Superintendent, Fisherton House, Salisbury.
1885. Henley, Edward W., M.R.C.S., L.R.C.P., Medical Superintendent, County Asylum, Barnwood, Gloucester.
1906. Herbert, Thomas, M.R.C.S.Eng., L.R.C.P., York City Asylum, Fulford, York.
1899. Herbert, William W., M.D., C.M.Edin., North Wales Counties Asylum, Denbigh, North Wales.
1877. Hetherington, Charles E., M.B., Medical Superintendent, District Asylum, Londonderry, Ireland.
1903. Hewitt, David Walker, M.B., B.Ch., R.U.I., Surgeon R.N.
1877. Hewson, R. W., L.R.C.P.Edin., Medical Superintendent, Coton Hill, Stafford.
1902. Higginson, John Wignmore, M.R.C.S., L.R.C.P., Resident Medical Officer, Hayes Park Asylum, Hayes Park, Middlesex.
1882. Hill, H. Gardiner, M.R.C.S., Medical Superintendent, Middlesex County Asylum, Tooting.
1905. Hines, Arthur, M.B., County Asylum, Stafford.
1871. Kingston, J. Tregelles, M.R.C.S.Eng., Redcote, St. Mark's Road, Leamington.
1881. Hitchcock, Charles Knight, M.D., Bootham Park, York.
1900. Holländer, Bernard, M.D., M.R.C.S., L.R.C.P., 35A, Welbeck Street, London, W.
1903. Hopkins, Charles Leighton, M.B., B.C.Cantab., York City Asylum, Fulford, York.
1894. Hotchkis, Robert D., M.A., M.D., Renfrew Asylum, Dykebar, N.B.
1900. Hughes, George Osborne, M.D.Virginia, M.R.C.S., L.R.C.P., Commonwealth Block, Market and Main Streets, Winnipeg, Canada.
1900. Hughes, Percy T., M.B., Ch.M.Edin., D.P.H.Lond., Medical Superintendent, Worcestershire County Asylum, Barnseley Hall, Bromsgrove.
1904. Hughes, William Stanley, M.R.C.S., L.R.C.P., Park View, Aberayron, Cardiganshire.
1857. Humphry, John, M.R.C.S.Eng., Medical Superintendent, County Asylum, Stone, near Aylesbury, Bucks.
1897. Hunter, David, M.A., M.B., B.C.Cantab., Medical Superintendent, West Ham Borough Asylum, Goodmayes, Ilford, Essex.
1904. Hunter, Percy Douglas, M.R.C.S., L.R.C.P.Lond., 2, Chartfield Avenue, Putney.
1905. Hutchinson, Joseph Armstrong, M.D., M.S.Durh., Northallerton, Yorkshire.
1906. Huxley, Charles Rodney, L.R.C.P.&S.Edin., L.F.P.S.Glas., Kent House Road, New Beckenham, Kent.
1882. Hyslop, James, D.S.O., M.D., Natal Government Asylum, Pietermaritzburg.

1888. Hyslop, Theo. B., M.D., C.M.Edin., M.R.C.P.E., M.P.C., Bethlem Royal Hospital, S.E.
1871. Ireland, William W., M.D.Edin., 1, Victoria Terrace, Musselburgh, N.B.
1906. Irwin, Peter Joseph, L.R.C.P.&S.I., L.M., District Asylum, Limerick.
1905. Jackson, Arthur Molyneux, M.D.Oxon., Medical Superintendent, Notts County Asylum, Radcliffe-on-Trent.
1866. Jackson, J. Hughlings, M.D.St. And., F.R.C.P.Lond., F.R.S., Physician to the Hospital for Epilepsy and Paralysis, &c., 3, Manchester Square, London, W.
1904. Jeremy, Harold Rowe, M.R.C.S.Eng., L.R.C.P.Lond., 60, Friern Road, East Dulwich, S.E.
1905. Johnson, Smeeton, M.B.Lond., L.R.C.P., M.R.C.S., Rainhill Asylum, near Liverpool.
1893. Johnston, Gerald Herbert, L.R.C.S. and L.R.C.P.Edin., Brooke House, Upper Clapton, N.
1905. Johnston, Thomas Leonard, L.R.C.P.&S.Edin., L.F.P.S.Glas., Bracebridge Asylum, Lincoln.
1905. Johnstone, George A., M.B., Ch.B.Aberd., 46, Charlotte Street, South Shields.
1878. Johnstone, J. Carlyle, M.D., C.M., Medical Superintendent, Roxburgh District Asylum, Melrose.
1903. Johnstone, Thomas, M.D.Edin., M.R.C.P.Lond., 32, Park Square, Leeds.
1880. Jones, D. Johnson, M.D.Edin., Medical Superintendent, Banstead Asylum, Surrey.
1866. Jones, Evan, M.R.C.S.Eng., Ty-mawr, Aberdare, Glamorganshire.
1882. Jones, Robert, M.D.Lond., B.S., F.R.C.S., Medical Superintendent, London County Asylum, Claybury, Woodford, Essex. (*Gen. Secretary from 1897 to 1906. PRESIDENT 1906-7.*)
1897. Jones, Samuel Lloyd, M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer, London County Asylum, Colney Hatch, N.
1898. Jones, W. Ernest, M.R.C.S.Eng., L.R.C.P.Lond., The Old Treasury Buildings, Spring Street, Melbourne.
1879. Kay, Walter S., M.D., Medical Superintendent, South Yorkshire Asylum, Wadsley, near Sheffield.
1886. Keay, John, M.D., Bangour Village, Uphall, Linlithgowshire.
1899. Keegan, Lawrence Edward, M.D., Medical Superintendent, Lunatic Asylum, St. John's, Newfoundland.
1902. Kelley-Patterson, Wm., M.D., M.Ch., R.U.I., Tod Pedu, South Godstone, Surrey.
1898. Kemp, Norah, M.B., C.M.Glas., The Retreat, York.
1899. Kennedy, Hugh T. J., L.R.C.P.&S.I., L.M., Assistant Medical Officer, District Asylum, Enniscorthy, Wexford.
1902. Kennedy, Patrick Gabriel, L.R.C.P.&S.Edin., L.F.P.S.Glasg., Assistant Medical Officer, London County Asylum, Banstead, Surrey.
1897. Kerr, Hugh, M.A., M.D.Glasg., Assistant Medical Officer, Bucks County Asylum, Stone, Aylesbury, Bucks.
1902. Kerr, Neil Thomson, M.B., C.M.Ed., Medical Superintendent, Lanark District Asylum, Hartwood, Shotts, N.B.
1893. Kershaw, Herbert Warren, M.R.C.S.Eng., L.R.C.P.Lond., Dinsdale Park, near Darlington.
1897. Kidd, Harold Andrew, M.R.C.S.Eng., L.R.C.P.Lond., Medical Superintendent, West Sussex Asylum, Chichester.
1903. King, Frank Raymond, B.A.Cantab., M.R.C.S.Eng., L.R.C.P.Lond., Medical Superintendent, Northumberland House, Finsbury Park, N.
1897. Kingdon, Wilfred Robert, M.B., B.S.Durh., 160, Goldhawk Road, W.
1905. Kingsbury, William Neave, M.R.C.S., L.R.C.P., Middlesex County Asylum, Tooting, S.W.



1903. Kingsford, Arthur Beresford, M.R.C.S., L.R.C.P.Lond., D.P.H.Camb., 19, Upper George Street, Bryanston Square, W.
1902. King-Turner, A. C., M.B., C.M.Edin., The Retreat, Fairford, Gloucestershire.
1899. Kirwan, James St. L., B.A., M.B., B.Ch., B.A.O.Roy. Univ. Irel., Medical Superintendent, District Asylum, Ballinasloe, Ireland.
1903. Kough, Edward Fitzadam, M.B., B.Ch., County Asylum, Gloucester.
1898. Labey, Julius, M.R.C.S., Medical Superintendent, Public Asylum, Jersey.
1902. Langdon-Down, Percival L., M.A., M.B., B.C.Cantab., Dixland, Hampton Wick, Middlesex.
1896. Langdon-Down, Reginald L., M.A., M.B., B.C.Cantab., M.R.C.P.Lond., Normansfield, Hampton Wick.
1902. Laval, Evariste, M.B., C.M.Edin., The Warneford Asylum, Oxford.
1898. Lavers, Norman, M.D., M.R.C.S., Medical Superintendent, The Asylum, Canterbury.
1899. Law, Charles D., L.R.C.P.&S.Edin., L.F.P.G.S., c/o Manager, Bank of Victoria, 10, King William Street, E.C.
1892. Lawless, George Robert, F.R.C.S.I., Medical Superintendent, District Asylum, Armagh.
1870. Lawrence, Alexander, M.A., M.D., County Asylum, Upton, Chester.
1905. Lawson, William Wilfred James, M.B.Aberd., Ch.B., Whitwell, Mansfield.
1883. Layton, Henry A., M.R.C.S.Eng., L.R.C.P.Edin., Cornwall County Asylum, Bodmin.
1899. Leeper, Richard R., F.R.C.S.I., Medical Superintendent, St. Patrick's Hospital, Dublin.
1905. Le Fann, Hugh, M.B., C.M.Aber., County Asylum, Prestwich, Manchester.
1883. Legge, Richard J., M.D., Medical Superintendent, County Asylum, Mickleover, Derby.
1906. Leggett, William, B.A., M.B., B.Ch.Dubl., Assistant Medical Officer, Kent County Asylum, Maidstone.
1894. Lentagne, John, B.A., F.R.C.S.I., Medical Visitor of Lunatics to the Court of Chancery, 42, Merrion Square, Dublin.
1899. Lewis, H. Wolseley, M.D.Brx., F.R.C.S.Eng., Medical Superintendent, Kent County Asylum, Barming Heath, Maidstone.
1879. Lewis, William Bevan, M.R.C.S., L.R.C.P., Medical Superintendent, West Riding Asylum, Wakefield.
1863. Ley, H. Rooke, M.R.C.S.Eng., Beaulieu, Westhy Road, Boscombe, Hants.
1859. Lindsay, James Murray, M.D.St.And., F.R.C.S. and F.R.C.P.Edin. Seacliff, St. Aubins, Jersey. (PRESIDENT, 1893.)
1903. Logan, Thomas Stratford, L.R.C.P. & S.Edin., L.F.P.S.Glas., Epileptic Colony, Ewell.
1906. Long, Sydney Herbert, M.D.Cantab., Physician to Norfolk and Norwich Hospital, 37, St. Giles Street, Norwich.
1899. Longworth, Stephen G., L.R.C.P. L.R.C.S.I., County Asylum, Melton, Suffolk.
1898. Lord, John R., M.B., C.M., Heath Asylum, Bexley, Kent. (*Assistant Editor of Journal since 1900.*)
1906. Lowry, James Arthur, M.B., B.Ch., B.A.O., R.U.I., Assistant Medical Officer, Middlesex County Asylum, Napsbury.
1904. Lyall, C. H. Gibson, L.R.C.P. & S.Edin., Garlands, Carlisle.
1906. Lyell, John Hepburn, M.D.Glasg., M.B., C.M., Assistant Medical Officer to H.M. Prison, the Royal Infirmary, and Parish Council, Perth, 15, Marshall Place, Perth.
1872. Lyle, Thomas, M.D.Glasg., 34, Jesmond Road, Newcastle-on-Tyne.

1906. Macarthur, John, M.R.C.S., L.R.C.P.Lond., London County Asylum, Claybury, Woodford Bridge, Essex.
1899. Macartney, William H. C., L.R.C.P.&S.I., Riverhead House, Sevenoaks.
1880. MacBryan, Henry C., L.R.C.P. & S. Edin., Kingsdown House, Box, Wilts.
1902. M'Carthy, Owen F., L.R.C.P.&S.I., District Lunatic Asylum, Cork, Ireland.
1900. McClintock, John, L.R.C.P. & L.R.C.S.Edin., Resident Medical Superintendent, Grove House, Church Stretton, Salop.
1900. McConaghey, John C., M.B., C.M.Edin., Parkside Asylum, Macclesfield, Cheshire.
1886. McCreery, James Vernon, L.R.C.S.I., Medical Superintendent, "Ormonde," Walpole Street, Kew, Victoria.
1901. MacDonald, James H., M.B., Ch.B.Glasg., Govan District Asylum, Hawkhead, Paisley, N.B.
1884. MacDonald, Peter W., M.D., C.M., Medical Superintendent, Dorset County Asylum, Herrison, Dorchester. (*Hon. Sec. S.W. Division 1894 to 1905.*)
1905. MacDonald, William Fraser, M.B., Ch.B.Edin., Drive Lodge, Polwarth Terrace, Edinburgh.
1905. McDougall, Alau, M.D.Vict., M.R.C.S., L.R.C.P.Lond., Medical Director, The David Lewis Colony, Sandle Bridge, near Alderley Edge, Cheshire.
1906. McDowall, Colin Francis Frederick, M.B., B.S.Durh., Assistant Medical Officer, City Asylum, Newcastle.
1870. McDowall, Thomas W., M.D.Edin., L.R.C.S., Medical Superintendent, Northumberland County Asylum, Morpeth. (*PRESIDENT, 1897-8.*)
1893. Macevoy, Henry John, M.D., B.Sc.Lond., M.P.C., 41, Buckley Road, Brondesbury, London, N.W.
1895. Macfarlane, Neil M., M.D.Aber., Medical Superintendent, Government Hospital, Thlotse Heights, Leribe, Basutoland, South Africa.
1883. Macfarlane, W. H., M.B. and Ch.B.Univ. of Melbourne, Medical Superintendent, Hospital for the Insane, New Norfolk, Tasmania.
1902. McGregor, John, M.B., Ch.B.Edin., Assistant Medical Officer, County Asylum, Bridgend, Glam.
1906. MacIlraith, Alex. Robert MacIntyre, Ayr District Asylum, Ayr.
1905. MacIlraith, W. MacLaren, L.R.C.P. & S.Edin., L.F.P.S.Glasg., L.D.S.R.C.S.Edin., Assistant Medical Officer, Norwich City Asylum, Hellesdon, near Norwich.
1899. McKelvey, Alexander Niel, L.&M.P.C.P.&S.I., The Asylum, Auckland, New Zealand.
1891. Mackenzie, Henry J., M.B., C.M.Edin., M.P.C., Assistant Medical Officer, The Retreat, York.
1903. Mackenzie, Theodore Charles, M.B., Ch.B.Edin., Royal Asylum, Aberdeen.
1899. Mackeown, William John, A.B., M.B., B.A., O.R.U.I., A.M.O., County Asylum, Fareham, Hants.
1873. Macleod, Murdoch D., M.B., 48, Westwood Road, Beverley, Yorks.
1901. Macleod, Neil, M.D., C.M.Edin., H.B.M. Consular Surgeon and Surgeon to the General Hospital, Shanghai, China, 12, Whangpoo Road, Shanghai.
1904. Macnamara, Eric Danvers, M.A., M.B., 9, Welbeck Street, W.
1898. Macnaughton, George W. F., M.D., F.R.C.S., 33, Lower Belgrave Street, Eaton Square, London, S.W.
1882. McNaughton, John, M.D., Medical Superintendent, Criminal Lunatic Asylum, Perth.
1882. Macphail, S. Rutherford, M.D.Edin., Derby Borough Asylum, Rowditch, Derby.
1896. Macpherson, Charles, M.D.Glasg., Deputy Commissioner in Lunacy, 193, Bruntsfield Place, Edinburgh.
1886. Macpherson, John, M.D., F.R.C.P., 8, Darnaway Street, Edinburgh.

1901. McRae, G. Douglas, M.B., C.M.Edin., Assistant Physician, Royal Asylum, Morningside, Edinburgh.
1902. Macrae, Kenneth Duncan Cameron, M.B., Ch.B.Edin., Lyuwood, Murrayfield, Edinburgh.
1894. McWilliam, Alexander, M.A., M.B., C.M.Aber., Medical Superintendent, Odiham, Winchfield, Hants.
1904. Manning, Ernest J., M.R.C.S., L.R.C.P.Lond., Broadmoor Asylum, Crowthorne, Berks.
1865. Manning, Henry J., B.A.Lond., M.R.C.S., Laverstock House, Salisbury.
1900. Manning, Herbert C., M.R.C.S., L.R.C.P., County Asylum, Cambridge.
1903. Marnan, John, M.B., B.Ch., Avoca, Mount Eden Road, Donnybrook, co. Dublin.
1896. Marr, Hamilton C., M.D.Glasg.Univ., Medical Superintendent, Woodilee Asylum, Lenzie.
1897. Marshall, John, M.B., C.M.Glasg., 56, Leamington Terrace, Edinburgh.
1905. Marshall, Robert Macnab, M.B., Ch.B., Oaklands, 21, Maxmill Drive, Pollokshields, Glasgow.
1896. Martin, James Charles, L.R.C.S.I., L.M., L.R.C.P., Assistant Medical Officer, District Asylum, Donegal.
1904. May, George Francis, M.D., C.M. (McGill), L.S.A., Winterton Asylum, Ferryhill, Durham.
1890. Menzies, William F., M.D., B.Sc.Edin., Medical Superintendent, Stafford County Asylum, Cheddleton, near Leek.
1891. Mercier, Charles A., M.D.Lond., F.R.C.S.Eng., Lecturer on Insanity, Westminster Hospital; Flower House, Catford, S.E.
1877. Merson, John, M.A., M.D.Aber., Medical Superintendent, Borough Asylum, Hull.
1871. Mickle, William Julius, M.D., F.R.C.P.Lond., Grove Hill Asylum, Bow, London. (PRESIDENT, 1896-7.)
1893. Middlemass, James, M.D., C.M., B.Sc.Edin., F.R.C.P., Medical Superintendent, Borough Asylum, Ryhope, Sunderland.
1898. Middlemist, George Edwyn, M.B., Keelby, Brocklesby, Lincs.
1883. Miles, George E., M.R.C.P., &c., Medical Superintendent, Hospital for the Insane, Rydalmere, New South Wales.
1887. Miller, Alfred, M.B. and B.C.Dubl., Medical Superintendent, Hatton Asylum, Warwick. (*Registrar since 1902.*)
1904. Miller, James Webster, The County Asylum, Herrison, Dorchester.
1893. Mills, John, M.B., B.Ch., and Diploma in Mental Diseases, R.U.I., District Asylum, Ballinasloe, Ireland.
1881. Mitchell, Richard B., M.D., Medical Supt., Midlothian District Asylum.
1878. Moody, James M., M.R.C.S.Eng., L.R.C.P.&L.M.Edin., Medical Superintendent, County Asylum, Cane Hill, Coulsdon, Surrey.
1885. Moore, Edw. E., M.D.Dubl., M.P.C., Medical Superintendent, District Asylum, Letterkenny, Ireland.
1906. Moore, Francis Joseph, L.R.C.P.&S.Irel., Assistant Medical Officer, London County Asylum, Banstead, Sutton, Surrey.
1899. Moore, Wm. D., M.D., M.Ch., Medical Superintendent, Holloway Sanatorium, Virginia Water, Surrey.
1892. Morrison, Cuthbert S., L.R.C.P. and L.R.C.S.Edin., Medical Superintendent, County and City Asylum, Burghill, Hereford.
1896. Morton, W. B., M.D.Lond., Assistant Medical Officer, Brislington House, Bristol.
1896. Mott, F. W., M.D., B.Sc., B.S., F.R.C.P.Lond., F.R.S., 25, Nottingham Place, London, W.
1896. Mould, Gilbert E., M.R.C.S., L.R.C.P.Lond., The Grange, Rotherham, Yorks.

1862. Mould, George W., M.R.C.S.Eng., Oak Mount, Colvin Bay, N. Wales.  
(PRESIDENT, 1880.)
1897. Mould, Philip G., M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer, Royal Lunatic Hospital, Cheadle, Manchester.
1897. Mumby, Bonner Harris, M.D.Aber., D.P.H.Cantab., Medical Superintendent, Borough Asylum, Portsmouth.
1893. Murdoch, James William Aitken, M.B., C.M.Glasg., Medical Superintendent, Berks County Asylum, Wallingford.
1900. Murphy, Jerome J., M.R.C.S., L.R.C.P.Lond., Banstead Asylum, Sutton, Surrey.
1878. Murray, Henry G., L.R.C.P.I., L.M., L.R.C.S.I., Assistant Medical Officer, Prestwich Asylum, Manchester.
1905. Murrell, Christine Mary, M.D.Lond., B.S., Royal Free Hospital, 86, Porchester Terrace, Hyde Park, W.
1904. Nash, Arthur Charles, M.R.C.S., L.R.C.P.Lond., County Asylum, Mickleover, Derby.
1903. Navarra, Norman, M.R.C.S., L.R.C.P., City of London Asylum, Stone, Dartford.
1880. Neil, James, M.D., M.P.C., Medical Superintendent, Warneford Asylum, Oxford.
1903. Nelis, William F., M.D., Newport Borough Asylum, Caerleon, Mon.
1875. Newington, Alexander, M.B.Camb., M.R.C.S.Eng., Woodlands, Ticehurst.
1873. Newington, H. Hayes, F.R.C.P.Edin., M.R.C.S.Eng., The Gables, Ticehurst, Sussex. (PRESIDENT, 1889.) (*Treasurer.*)
1904. Nicholl, Robert Campbell, L.R.C.P. & S.I., Hatton Asylum, nr. Warwick.
1869. Nicolson, David, C.B., M.D., C.M.Aber., M.R.C.P.Edin., F.S.A.Scot., Balgownie, Edgeborough Road, Guildford. (PRESIDENT, 1895-6.)
1899. Nixon, John C., M.B., West Riding Asylum, Menston, nr. Leeds.
1893. Nobbs, Athelstane, M.D., C.M.Edin., Layton House, Upper Richmond Road, S.W.
1888. Nolan, Michael J., L.R.C.P.I., M.P.C., Medical Superintendent, District Asylum, Downpatrick.
1880. Norman, Conolly, F.R.C.P.I., Medical Superintendent, Richmond District Asylum, Dublin, Ireland. (*Hon. Secretary for Ireland, 1887-1894.*) (PRESIDENT, 1894-5.) (*Co-Editor of Journal since 1895.*)
1885. Oakshott, James A., M.D., Medical Superintendent, District Asylum, Waterford, Ireland.
1906. O'Brien, Mary, L.S.A., Borough Asylum, Leicester.
1903. O'Doherty, Patrick, B.A. and M.B.Irel., District Asylum, Omagh.
1904. O'Downey, Augustine Francis, L.R.C.P. & S. Edin., Salop and Montgomery County Asylum, Bicton Heath, nr. Shrewsbury.
1901. Ogilvy, David, B.A., M.D., B.Ch., L.M.Dub., Senior Assistant Medical Officer, London County Asylum, Herton, nr. Epsom, Surrey.
1892. O'Mara, Francis, L.R.C.P.&S.I., District Asylum, Ennis, Ireland.
1886. O'Neill, Edward D., M.R.C.P.I., Medical Superintendent, The Asylum, Limerick.
1868. Orange, William, M.D.Heidelb., F.R.C.P.Lond., C.B., Oakhurst, Godalming, Surrey. (PRESIDENT, 1883.)
1902. Orr, David, M.B., C.M.Edin., Pathologist, County Asylum, Prestwich, Laucs.
1899. Osburne, Cecil A. P., F.R.C.S.Edin., L.R.C.P.Edin., The Grove, Old Catton, Norwich.
1890. Oswald, Landel R., M.B., M.P.C., Physician Superintendent, Royal Asylum, Gartnavel, Glasgow.
1899. Owen, Corbet W., M.B., C.M.Edin., 31, High Street, Bangor, North, Wales.



1905. Paine, Frederick, M.R.C.S., L.R.C.P., Claybury Asylum, Woodford Bridge, Essex.
1898. Parker, William Arnot, M.B., C.M., Medical Superintendent, Gartloch Asylum, Gartcosh, N.B.
1898. Pasmore, Edwin Stephen, M.D.Lond., M.R.C.P.Lond., Croydon Mental Hospital, Warlingham, Surrey.
1901. Passmore, Wm. Edwin, L.S.A.Lond., Forest View, Woodford Bridge, Essex.
1899. Paton, Robert N., L.R.C.P., L.R.C.S.Edin., Medical Officer, H.M. Prison, Wormwood Scrubbs, London, W.
1899. Patrick, John, M.B., Ch.B., District Asylum, Belfast.
1892. Patterson, Arthur Edward, M.D., C.M.Aber., Senior Assistant Medical Officer, City of London Asylum, Dartford.
1905. Paul, Maurice Eden, M.D.Bru.x., M.R.C.S., L.R.C.P., Moorcroft, Parkstone, Dorset.
1903. Pearce, Francis H., M.B., B.C.Cantab., Madeley Court, Salop.
1893. Perceval, Frank, M.R.C.S.Eng., L.R.C.P.Lond., Medical Superintendent, County Asylum, Prestwich, Manchester, Lancashire.
1878. Philipps, Sutherland Rees, M.D., C.M. Queen's Univ. Irel., F.R.G.S., 60, Iverna Court, Kensington, W.
1875. Philipson, Sir George Hare, M.D. and M.A.Cantab., F.R.C.P.Lond., 7, Eldon Square, Newcastle-on-Tyne.
1906. Phillips, Nathaniel Richard, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, London County Asylum, Banstead, Sutton, Surrey.
1905. Phillips, Norman Routh, M.D.Bru.x., M.R.C.S., L.R.C.P., Stone House, St. Martins, Canterbury.
1891. Pierce, Bedford, M.D.Lond., F.R.C.P., Medical Superintendent, The Retreat, York. (*Hon. Sec. N. and M. Division.*)
1888. Pietersen, J. F. G., M.R.C.S., Ashwood House, Kingswinford, near Dudley, Stafford.
1896. Planck, Charles, M.A.Camb., M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer, The Asylum, Haywards Heath.
1889. Pope, George Stevens, L.R.C.P.&L.R.C.S.Edin., L.F.P.&S.Glasg., Medical Superintendent, Somerset and Bath Asylum, "Westfield," near Wells, Somerset.
1876. Powell, Evan, M.R.C.S.Eng., L.S.A., Medical Superintendent, Borough Lunatic Asylum, Nottingham.
1904. Pringle, Archibald Douglas, Government Asylum, Pietermaritzburg, Natal, South Africa.
1875. Pringle, Henry T., M.D.Glasg., Hawtree, Ferndown, Wimborne.
1901. Pugh, Robert, M.D.Edin., Ch.B., Medical Superintendent, Brecon and Radnor Asylum, Talgarth, S. Wales.
1904. Quin, Henry C. E., L.R.C.P., L.R.C.S.Edin., Camberwell House, Peckham Road, S.E.
1904. Race, John Percy, M.R.C.S., L.R.C.P., L.S.A., Assistant Medical Officer, London County Asylum, Colney Hatch, N.
1899. Rainsford, F. E., M.D., B.A., Resident Physician, Stewart Institute, Palmerston, co. Dublin.
1894. Rambaut, Daniel F., M.A., M.D.Univ. Dubl., Salop and Montgomery Asylum, Bieton Heath, Shrewsbury.
1902. Ratray, A. Mair, M.B., C.M.Edin., City Asylum, Gosforth, Newcastle-on-Tyne.
1889. Raw, Nathan, M.D., F.R.C.S., Mill Road Infirmary, Liverpool.
1893. Rawes, William, M.D.Durb., F.R.C.S.Eng., Medical Superintendent, St. Luke's Hospital, Old Street, London, E.C.
1870. Rayner, Henry, M.D.Aberd., M.R.C.P.Edin., 16, Queen Anne Street, London, W. (PRESIDENT, 1884.) (*General Secretary, 1878-89.*) (*Co-Editor of Journal since 1895.*)
1903. Read, George F., L.R.C.S., L.R.C.P.Edin., Hospital for the Insane, New Norfolk, Tasmania.

1899. Redington, John, F.R.C.S.&L.R.C.P.I., A.M.O., Richmond Asylum, Dublin.
1887. Reid, William, M.D., Physician Superintendent, Royal Asylum, Aberdeen.
1886. Revington, George, M.D. and Stewart Scholar Univ. Dubl., M.P.C., Medical Superintendent, Central Criminal Asylum, Dundrum, Ireland.
1903. Rhodes, John Milson, M.D.Brux., L.R.C.P.&S.Edin., Ivy Lodge, Barlow Moor, Didsbury, Manchester.
1899. Rice, David, M.R.C.S., L.R.C.P., Cheddleton Asylum, nr. Leeks, Staffs.
1897. Richard, William J., M.A., M.B., C.M.Glasg., Medical Officer, Govan Parochial Asylum, Merryflats, Govan.
1899. Richards, John, M.B., C.M.Edin., Leicestershire and Rutland Asylum, Leicester.
1905. Ridley, Edward Hope, M.D.Edin., Ticehurst House, Ticehurst, Sussex.
1904. Rigden, Alan, M.D.Durh., Salop and Montgomery Asylum, nr. Shrewsbury.
1893. Rivers, William H. R., M.A., M.D.Lond., St. John's College, Cambridge University.
1903. Roberts, Norcliffe, M.B., B.S.Durh., London County Asylum, Cane Hill, Coulsdon, Surrey.
1871. Robertson, Alexander, M.D.Edin., 11, Woodside Crescent, Glasgow.
1905. Robertson, Constance C., M.D.Durh., B.S., Semmercote, Darlington.
1887. Robertson, Geo. M., M.B., C.M. and F.R.C.P.Edin., M.P.C., Medical Superintendent, District Asylum, Larbert, Stirling.
1895. Robertson, William Ford, M.D., C.M., 9, Priestfield Road, Edinburgh.
1905. Robertson-Milne, Capt. Charles John, M.B., C.M.Aberd., Superintendent, Bengal Central Asylum, Berhampur, Bengal.
1900. Robinson, Harry A., M.D., Ch.B.Vict., 57, Canning Street, Liverpool.
1876. Rogers, Edward Coulton, M.R.C.S.Eng., L.S.A., County Asylum, Fulbourn, Cambridge.
1859. Rogers, Thomas Lawes, M.D.St. And., M.R.C.P.Lond., M.R.C.S.Eng., Eastbank, Court Road, Eltham, Kent. (PRESIDENT, 1874.)
1895. Rolleston, Lancelot W., M.B., B.S.Durh., Medical Superintendent, Middlesex County Asylum, Napsbury, near St. Albans.
1879. Ronaldson, J. B., M.D.St.And., F.R.C.S.&L.R.C.P.Edin., Medical Officer, District Asylum, Haddington, N.B.
1879. Roots, William H., M.R.C.S., Canbury House, Kingston-on-Thames.
1899. Rorie, George Arthur, M.B., C.M., Senior Assistant Medical Officer, Dorset County Asylum, Dorchester.
1860. Rorie, James, M.D.Edin., L.R.C.S.Edin., 4, Roxburgh Terrace, West Park Road, Dundee. (*Late Hon. Secretary for Scotland.*)
1888. Ross, Chisholm, M.D., Lunacy Department, Sydney, New South Wales.
1905. Ross, Sheila Margaret, M.B., Holloway Sanatorium, Virginia Water, Surrey.
1899. Rotherham, Arthur, M.A., M.B., B.C.Cantab., Medical Superintendent, Darent Asylum, Dartford, Kent.
1902. Round, John, L.R.C.P., L.R.C.S., L.F.P.S., 30, New Cross Road, S.E.
1906. Rowan, Marriott Logan, B.A., M.D., R.M.I., Assistant Medical Officer, Derby County Asylum, Mickleover.
1884. Rowe, Edmund L., L.R.C.P.&S.Edin., Medical Superintendent, Borough Asylum, Ipswich.
1883. Rowland, E. D., M.B., C.M.Edin., The Public Hospital, New Amsterdam, Berbice, British Guiana.

1902. Rows, Richard Gundry, M.D.Lond., M.R.C.S., L.R.C.P., Pathologist, County Asylum, Lancaster.
1877. Russell, Arthur P., M.B., M.R.C.P.Edin., The Lawn, Lincoln.
1866. Rutherford, James, M.D.Edin., F.R.C.P.Edin., F.F.P.S.Glasgow, Physician Superintendent, Crichton Royal Institution, Dumfries. (*Hon. Secretary for Scotland, 1876-86.*)
1896. Rutherford, James Mair, M.B., C.M.Edin., Assistant Physician, Royal Edinburgh Asylum, Morningside.
1896. Rutherford, Robert Leonard, M.D., Medical Superintendent, Digby's Asylum, Exeter.
1892. Rutledge, Victor J., M.B., District Asylum, Londonderry, Ireland.
1902. Sall, Ernest Frederick, M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer, West Sussex County Asylum, Chichester.
1905. Salter, Charles Edward, M.D.Lond., B.S., F.R.C.S.E., Scarborough Hospital, 34, Prince of Wales Terrace, Scarborough.
1894. Sankey, Edward H. O., M.A., M.B., B.C.Cantab., Resident Medical Licensee, Boreatton Park Licensed House, Baschurch, Salop.
- \* Sankey, R. H. Heurtley, M.R.C.S.Eng., 3, Marston Ferry Road, Oxford.
1873. Savage, Geo. H., M.D.&F.R.C.P.Lond., 26, Devonshire Place, W. (*Late Editor of Journal.*) (PRESIDENT, 1886.)
1906. Scanlan, John, L.R.C.S.Edin., Assistant Medical Officer, Devon County Asylum, Exminster.
1896. Scott, James, M.B., C.M.Edin., 19, Raleigh Gardens, Brixton Hill, London, S.W.
1889. Scowcroft, Walter, M.R.C.S., Medical Superintendent, Royal Lunatic Hospital, Cheadle, near Manchester.
1880. Seecombe, George S., M.R.C.S., L.R.C.P., The Colonial Lunatic Asylum, Port of Spain, Trinidad, West Indies.
1879. Seed, William Hy., M.B., C.M.Edin., The Poplars, 110, Waterloo Road, Ashton-on-Ribble, Preston.
1906. Sephton, Robert Poole, B.A.Cantab., M.R.C.S.Eng., L.R.C.P.Lond., County Lunatic Asylum, Lancaster.
1882. Seward, William J., M.B.Lond., M.R.C.S., Medical Superintendent, Colney Hatch Asylum, London, N.
1901. Shaw, B. Henry, M.B., B.Ch., B.A.O., R.M.I., Assistant Medical Officer, County Asylum, Stafford.
1905. Shaw, Charles John, M.B., Ch.B., M.R.C.P.E., Montrose Asylum.
1891. Shaw, Harold B., B.A., M.B., D.P.H.Camb., Medical Superintendent, Isle of Wight County Asylum, Whitecroft, Newport, Isle of Wight.
1880. Shaw, James, M.D., 310, Kensington, Liverpool.
1904. Shaw, Patrick, L.R.C.P.&S.Edin., Ararat Hospital for the Insane, Ararat, Victoria, Australia.
- Shaw, T. Clave, M.D.Lond., F.R.C.P.Lond., 30, Harley Street, London, W.
1882. Sheldon, Thomas S., M.B., Medical Superintendent, Cheshire County Asylum, Parkside, Macclesfield.
1900. Shera, John E. P., M.D., Somerset County Asylum, Wells, Somerset.
1877. Shuttleworth, George E., M.D.Heidelb., M.R.C.S. and L.S.A.Eng., B.A. Lond., late Medical Superintendent, Royal Albert Asylum, Lancaster; Parkholme, East Sheen, S.W.
1899. Sibley, Reginald Oliver, M.B.Lond., M.R.C.S., L.R.C.P., Assistant Medical Officer, London County Asylum, Cane Hill, Coulsdon, Surrey.
1906. Sievwright, Henry Gates, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, Monmouth Asylum, Abergavenny.
1901. Simpson, Alexander, M.A., M.D.Aber., Medical Superintendent, County Asylum, Wuiwick, Newton-le-Willows, Lancashire.
1905. Simpson, Edward Swan, M.B., Ch.B.Edin., East Riding Asylum, Beverley, Yorks.

1888. Sinclair, Eric, M.D.Glasg., Medical Superintendent, Gladesville Asylum, New South Wales.
1891. Skeen, James Humphry, M.B., C.M.Aber., Medical Superintendent, Glasgow District Asylum, Bothwell.
1898. Skeen, William St. John, M.B., C.M., County Asylum, Winterton, Ferryhill, Durham.
1900. Skinner, Ernest W., M.D., C.M.Edin., Mansfield, Rye, Sussex.
1901. Slater, George N. O., M.D., Assistant Medical Officer, Essex County Asylum, Brentwood.
1897. Smalley, Herbert, M.D.Durh., L.R.C.P., M.R.C.S., Prison Commission, Home Office, Whitehall, S.W.
1905. Smith, George William, M.B., Holloway Sanatorium, Virginia Water, Surrey.
1899. Smith, John G., M.D., Herts County Asylum, Hill End, St. Albans, Herts.
1904. Smith, Peter Campbell, L.R.C.P.&S.Edin., 4, Upper Grosvenor Road, Tunbridge Wells.
1885. Smith, R. Percy, M.D., B.S., F.R.C.P., M.P.C., 36, Queen Anne Street, Cavendish Square, W. (*General Secretary*, 1896-7.) (*PRESIDENT*, 1904-5.)
1884. Smith, W. Beattie, F.R.C.S.Edin., L.R.C.P.Lond., 4, Collins Street, Melbourne, Victoria.
1903. Smith, William Maule A., M.B., Ch.B.Edin., M.R.C.P.Edin., West Riding Asylum, Wakefield, Yorks.
1901. Smyth, Robt. B., M.A., M.B., Ch.B., Senior Assistant Medical Officer, County Asylum, Gloucester.
1899. Smyth, Walter S., M.B., B.Ch., R.U.I., Assistant Medical Officer, County Asylum, Antrim.
1885. Soutar, James Grieg, M.B., Barnwood House, Gloucester.
1906. Spark, Percy Charles, M.R.C.S., L.R.C.P.Lond., London County Asylum, Hanwell, W.
1883. Spence, John Buchan, M.D., M.C., The Asylum, Colombo, Ceylon.
1875. Spence, J. Beveridge, M.D., M.C.Queen's Univ., Medical Superintendent, Burntwood Asylum, near Lichfield. (*PRESIDENT*, 1899-1900, formerly *Registrar*.)
1891. Stansfield, T. E. K., M.B., C.M.Edin., Baldwyn's Park, Bexley, Kent.
1901. Starkey, William, M.B., B.Ch., B.A.O.Roy. Univ. Irel., Assistant Medical Officer, Lancashire County Asylum, Prestwich, near Manchester.
1898. Steen, Robert H., M.D.Lond., B.A., R.U.I., Medical Superintendent, City of London Asylum, Stone, Dartford.
1905. Stevenson, William Edward, M.B., B.S.Durh., West Riding Asylum, Menston, Leeds.
1905. Stewart, Frederick William, B.A., M.B., B.Ch., B.A.O.I., Kent County Asylum, Barming Heath, near Maidstone.
1868. Stewart, James, B.A.Queen's Univ.Irel., F.R.C.P.Edin., L.R.C.S.Irel., Junior Constitutional Club, Piccadilly, S.W.
1887. Stewart, Rothsay C., M.R.C.S., Medical Superintendent, County Asylum, Leicester.
1905. Stillwell, Henry Francis, L.R.C.P.&S.E., Barnwood House, Gloucester.
1862. Stilwell, Henry, M.D.Edin., M.R.C.S.Eng., Moorcroft House, Hillingdon, Middlesex.
1899. Stilwell, Reginald J., M.R.C.S., L.R.C.P., Moorcroft House, Hillingdon, Middlesex.
1864. Stocker, Alonzo Henry, M.D.St. And., M.R.C.P.Lond., M.R.C.S.Eng., Medical Superintendent, Peckham House Asylum, Peckham.
1897. Stoddart, William Henry Butter, M.D., B.S.Lond., M.R.C.S.Eng., M.R.C.P.Lond., Bethlem Royal Hospital, London, S.E.
1905. Strathearn, John, M.B., Ch.B., British Ophthalmic Hospital, Jerusalem.



1903. Stratton, Percy Haughton, M.R.C.S., L.R.C.P.Lond., The Royal Societies Club, St. James's Street, S.W.
1885. Street, C. T., M.R.C.S., L.R.C.P., Haydock Lodge, Ashton, Newton-le-Willows, Lancashire.
1900. Sturrock, James Prain, M.A., M.B., C.M.Edin., Midlothian and Peebles Asylum, Rosslynlee, N.B.
1886. Suffern, Alex. C., M.D., Medical Superintendent, Ruberry Hill Asylum near Bromsgrove, Worcestershire.
1894. Sullivan, William C., M.D.R.U.I., 444, Camden Road, London, N.
1898. Sutcliffe, John, M.R.C.S., L.R.C.P., Royal Asylum, Cheadle, near Manchester.
1903. Sutherland, David, M.B., Ch.B.Edin., Pathologist, The Dispensary, Workop, Notts.
1895. Sutherland, John Francis, M.D.Edin., Deputy Commissioner in Lunacy, 51, Queen Street, Edinburgh.
1877. Swanson, George I., M.D.Edin., The Pleasaunce, Heworth Moor, York.
1901. Sykes, Arthur, M.R.C.S., L.R.C.P., Assistant Medical Officer, City Asylum, Hellesdon, nr. Norwich.
1897. Tait, James Sinclair, M.D., L.R.C.P.Lond., F.R.C.S.Edin., L.R.C.P. Edin., D.P.H.Edin., R.C.P.S.Edin., F.P.S.Glasg., Medical Superintendent, Hospital for Insane, St. John's, Newfoundland.
1904. Tate, Robert George H., M.D., D.P.H., Lt. R.A.M.C.
1887. Tate, William B., M.D.Aber., M.R.C.P.Lond., M.R.C.S.Eng., Medical Superintendent, Lunatic Hospital, The Coppice, Nottingham.
1897. Taylor, Frederic Ryott Percival, M.D., B.S.Lond., M.R.C.S.Eng., L.R.C.P.Lond., Medical Superintendent, East Sussex Asylum, Hellingly.
1904. Thompson, Alexander D., M.B., Ch.B.Glasg., Monmouthshire Asylum, Abergavenny.
1880. Thomson, David G., M.D., C.M., Medical Superintendent, County Asylum, Thorpe, Norfolk.
1903. Thomson, Herbert Campbell, M.D., F.R.C.P.Lond., Assist. Physician Middlesex Hospital, 34, Queen Anne Street, W.
1905. Thomson, James Hutcheon, M.B., Ch.B.Aberd., Earlswood Asylum, Redhill, Surrey.
1905. Thwaites, Harry, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Lebanon Hospital, Asfuriyeh, near Beyrout, Syria.
1905. Tidbury, Robert, M.D., R.U.I., M.Ch., L.M., The Borough Asylum, Ipswich.
1901. Tighe, John V. G. B., M.B., B.Ch., B.A.O.Irel., North Riding Asylum, Clifton, Yorks.
1900. Tinker, William, M.R.C.S., L.R.C.P., Hordle House, Brockenhurst, Hants.
1898. Todd, Percy Everard, M.B., Medical Superintendent, Pretoria Asylum, Transvaal, South Africa.
1905. Toogood, Frederick Sherman, M.D.Lond., Medical Superintendent, The Infirmary, High Street, Lewisham.
1903. Topham, J. Arthur, B.A.Cantab., M.R.C.S.&P.Lond., County Asylum, Chartham, Kent.
1896. Townsend, Arthur A. D., M.D., Assistant Medical Officer, Hospital for Insane, Barnwood House, Gloucester.
1904. Treadwell, Oliver Ferreira Naylor, M.R.C.S.Eng., L.S.A., H. M. Prison, Parkhurst, I. of W.
1903. Tredgold, Alfred F., M.R.C.S., L.R.C.P., 6, Dapdune Crescent, Guildford, Surrey.
1902. Trevelyan, Edmund Fauriel, M.D.Lond., F.R.C.P.Lond., Assistant Physician to the Leeds General Infirmary, 40, Park Square, Leeds.
1881. Tuke, Charles Molesworth, M.R.C.S.Eng., Chiswick House, Chiswick.
1888. Tuke, John Batty, jun., M.D., F.R.C.P.Edin., Resident Physician, Saughton Hall, Edinburgh; Linden Lodge, Loanhead, Midlothian.

1885. Tuke, T. Seymour, M.A., M.B., B.Ch., M.R.C.S.E., Chiswick House, Chiswick, W.
1877. Turnbull, Adam Robert, M.B., C.M.Edin., Medical Superintendent, Fife and Kinross District Asylum, Cupar. (*Late Hon. Secretary for Scotland.*)
1906. Turnbull, Peter Mortimer, M.B., B.Ch.Aberd., Tooting Bec Asylum, Tooting, S.W.
1889. Turner, Alfred, M.D., C.M., Plympton House, Plympton, S. Devon.
1906. Turner, Frank Douglas, M.B.Lond., M.R.C.S., L.R.C.P., Medical Officer, Eastern Counties Asylum for Idiots, Colchester.
1890. Turner, John, M.B., C.M.Aberd., Senior Assistant Medical Officer, Essex County Asylum, Brentwood.
1903. Turner, Oliver P., M.R.C.S., L.R.C.P., Peckham House, Peckham, S.E.
1878. Urquhart, Alex. Reid, M.D., F.R.C.P.E., Physician Superintendent, James Murray's Royal Asylum, Perth. (*Co-Editor of Journal since 1894.*) (*Hon. Secretary for Scotland, 1886-94.*) (*PRESIDENT, 1898-9.*)
1900. Veitch, J. Ogilvie, M.B., C.M.Edin., County Asylum, Powick, Worcester.
1904. Vincent, George A., M.B., B.Ch.Edin., Assistant Medical Superintendent, St. Ann's Asylum, Trinidad, B.W.I.
1894. Vincent, William James, M.B.Durh., Assistant Medical Officer, Wadsley Asylum, near Sheffield.
1884. Walker, Edw. B. C., M.D., C.M.Edin., Medical Superintendent, East Sussex Asylum, Haywards Heath.
1896. Walker, William F., L.R.C.S.&L.M.Edin., L.S.A.Lond., Plas-yn-Dinas, Dinas Mawddwy, Merionethshire.
1900. Walters, John Basil, M.R.C.S.Eng., L.R.C.P.Lond., 51, Devonshire Street, Portland Place, London, W.
1889. Warnock, John, M.D., C.M., B.Sc., Abassia, nr. Cairo, Egypt.
1895. Waterston, Jane Elizabeth, M.D.Bru.x., L.R.C.P.I., L.R.C.S.Edin., 58, Parliament Street, Cape Town, South Africa.
1902. Watson, Frederick, M.B., C.M.Edin., The Grange, East Finchley, London, N.
1891. Watson, George A., M.B., C.M.Edin., M.P.C., County Asylum, Rainhill, Liverpool.
1885. Watson, William Riddell, L.R.C.S. and L.R.C.P.Edin., Govan District Asylum, Hawkhead, Paisley.
1880. Weatherly, Lionel A., M.D., M.R.C.S., Bailbrook House, Bath.
1897. Welsh, Gilbert Aitken, M.D., C.M.Edin., The Crescent, Garliestown, N.B.
1880. West, George Francis, L.R.C.P.Edin., Medical Superintendent, District Asylum, Kilkenny, Ireland.
1872. Whitcombe, Edmund Bancks, M.R.C.S., Medical Superintendent, Winson Green Asylum, Birmingham. (*PRESIDENT, 1891.*)
1884. White, Ernest William, M.B.Lond., M.R.C.P.Lond., Fenstanton, Christchurch Road, Streatham Hill, S.W. (*Hon. Sec. South-Eastern Division, 1897-1900.*) (*PRESIDENT 1903-4.*)
1905. White, Robert George, M.A., M.B., B.Sc., Ch.B., Pathological Department, School of Medicine, Cairo, Egypt.
1903. Whittingham, George M., M.R.C.S., L.R.C.P., 77, Foxbourne Road, Ballham, S.W.
1905. Whittington, Richard, M.A., M.D., 1, Sillwood Place, Brighton, Sussex.
1889. Whitwell, James Richard, M.D. and C.M., Medical Superintendent, Suffolk County Asylum, Melton Woodbridge.
1903. Wigan, Charles Arthur, M.D.Durh., M.R.C.S.Eng., Deepdene, Portishead, Somerset.
1883. Wigglesworth, Joseph, M.D., F.R.C.P.Lond., Rainhill Asylum, Lancashire. (*PRESIDENT, 1902-3.*)
1895. Wilcox, Arthur William, M.D., C.M.Edin., Assistant Medical Officer, County Asylum, Hatton, Warwick.

1900. Wilkinson, H. B., M.R.C.S., L.R.C.P., Assistant Medical Officer,  
Plymouth Borough Asylum, Blackadon, Ivybridge, South Devon.
1887. Will, John Kennedy, M.A., M.D., C.M., Bethnal House, Cambridge  
Road, N.E.
1905. Williams, David John, M.R.C.S., L.R.C.P.Lond., Medical Superintendent  
The Asylum, Kingston, Jamaica.
1901. Wilson, Albert, M.D.Edin., 1, Belsize Park, N.W.
1904. Wilson, Geoffrey Plumpton, M.R.C.S., L.R.C.P.Lond., Kesteven Asylum  
Sleaford, Lincs.
1890. Wilson, George R., M.D., C.M., M.P.C., 8, Rutland Square, Edinburgh.
1896. Wilson, Robert, M.B., C.M.Glasg., Nailsworth, Gloucestershire.
1897. Winder, W. H., M.R.C.S., L.R.C.P.Lond., D.P.H.Cantab., Deputy  
Medical Officer, H.M. Convict Prison, Aylesbury.
1875. Winslow, Henry Forbes, M.D.Lond., M.R.C.P.Lond., 11, Burwood Place,  
Connaught Square, Hyde Park, W.
1894. Wood, Guy Mills, M.B.Durh., 49, Gordon Square, London, W.C.
1904. Wood, Martin Stanley, M.B., Ch.B.Vict., Royal Asylum, Cheadle,  
Cheshire.
1903. Wood, Maurice Dale, M.D.Durh., B.S., Assistant Medical Officer, County  
Asylum, Haywards Heath, Sussex.
1869. Wood, T. Outterson, M.D., M.R.C.P.Lond., F.R.C.P., F.R.C.S.Edin.,  
40, Margaret Street, Cavendish Square, W. (PRESIDENT, 1905-6.)
1885. Woods, J. F., M.D., M.R.C.S., 7, Harley Street, Cavendish Square, W.
1905. Worsley, Richard Le Geyt, M.R.C.S., L.R.C.P., H.M. Prison, Liverpool.
1900. Worth, Reginald, M.R.C.S., L.R.C.P., Middlesex Asylum, Tooting, S.W.
1877. Worthington, Thomas Blair, M.A., M.D., and M.C.Trin. Coll., Dubl.,  
95, Breconsfield Villas, Preston Park, Brighton.
1862. Yellowlees, David, LL.D., M.D.Edin., F.F.P.S.Glasg., 6, Albert Gate,  
Dowan Hill, Glasgow. (PRESIDENT, 1890.)

ORDINARY MEMBERS	...	...	...	...	...	638
HONORARY MEMBERS	...	..	...	...	...	32
CORRESPONDING MEMBERS	...	...	...	...	...	15
Total						685

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List of those who have passed the Examination for the Certificate of Efficiency in Psychological Medicine, entitling them to append M.P.C. (Med.-Psych. Certif.) to their names.

- |                                 |                           |
|---------------------------------|---------------------------|
| Adamson, Robert O.              | Cooper, Alfred J. S.      |
| Adkins, Percy, R.               | Cope, George Patrick.     |
| Ainley, Fred Shaw.              | Corner, Harry.            |
| Ainslie, William.               | Cotton, William.          |
| Alexander, Edward H.            | Couper, Sinclair.         |
| Anderson, A. W.                 | Cowan, John J.            |
| Anderson, Bruce Arnold.         | Cowie, C. G.              |
| Anderson, John.                 | Cowie, George.            |
| Andriezen, W.                   | Cowper, John.             |
| Armour, E. F.                   | Cox, Walter H.            |
| Attegalie, J. W. S.             | 8 Craig, M.               |
| Aveline, H. T. S.               | Cram, John.               |
| Ballantyne, Harold S.           | Crills, G. H.             |
| Barbour, William.               | Cross, Edward John.       |
| Barker, Alfred James Glanville. | Cruikshank, George.       |
| Bashford, Ernest Francis.       | Cullen, George M.         |
| Begg, William.                  | Cunningham, James F.      |
| Belben, F.                      | Dalgetty, Arthur B.       |
| Bird, James Brown.              | Davidson, Andrew.         |
| Blachford, J. Vincent.          | Davidson, William.        |
| Black, Robert S.                | 6 Dawson, W. R.           |
| Black, Victor.                  | De Silva, W. H.           |
| Blackwood, John.                | Distin, Howard.           |
| Blandford, Henry E.             | Donald, Wm. D. D.         |
| 7 Bond, C. Hubert.              | Donaldson, R. L. S.       |
| Bond, R. St. G. S.              | Donellan, James O'Conor.  |
| Bowlan, Marcus M.               | Douglas, A. R.            |
| Boyd, James Paton.              | Downey, Augustine.        |
| Bristowe, Hubert Carpenter.     | Drummond, Russell J.      |
| Brodie, Robert C.               | Eames, Henry Martyn.      |
| Brough, C.                      | Earls, James H.           |
| Brown, Hy. E.                   | East, W. Norwood.         |
| Bruce, John.                    | Easterbrook, Charles C.   |
| Bruce, Lewis C.                 | Eden, Richard A. S.       |
| Brush, S. C.                    | Edgerley, S.              |
| Bulloch, William.               | Edwards, Alex. H.         |
| Calvert, William Dobree.        | Elkins, Frank A.          |
| Cameron, James.                 | Ellis, Clarence J.        |
| Campbell, Alex Keith.           | English, Edgar.           |
| Campbell, Alfred W.             | Eustace, J. N.            |
| Campbell, Peter.                | Eustace, Henry Marcus.    |
| Carmichael, W. J.               | Evans, P. C.              |
| Carruthers, Samuel W.           | Ewan, John A.             |
| Carter, Arthur W.               | Ezard, Ed. W.             |
| Chambers, James.                | Falconer, James F.        |
| Chapman, H. C.                  | Farquharson, Wm. Fredk.   |
| Christie, William.              | Fennings, A. A.           |
| Clarke, Robert H.               | Ferguson, Robert.         |
| Clayton, Frank Herbert A.       | Findlay, G. Landsborough. |
| Clinch, Thomas Aldous.          | Fitzgerald, Gerald.       |
| Coles, Richard A.               | Fleck, David.             |
| Collie, Frank Lang.             | Fox, F. G. T.             |
| Collier, Joseph Henry.          | Fraser, Donald Allan.     |
| Conolly, Richard M.             | Fraser, Thomas.           |
| Conry, John.                    | Frederick, Herbert John.  |
| Cook, William Stewart.          | Gaudin, Francis Neel.     |



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# THE JOURNAL OF MENTAL SCIENCE

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## Part I.—Original Articles.

*The Pathological Anatomy and Pathology of Epilepsy.*  
By JOHN TURNER, M.B.(Aberd.), Assistant Medical  
Officer Essex County Asylum.

### PART I.

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## PART I.

THE following pages contain an account of the microscopical examination of the central nervous systems of forty-one cases of idiopathic epilepsy, which form the data on which I base my thesis that epilepsy is a disease occurring in persons with a defect of the nervous system either congenital or involutional, and in whom also there is an abnormal state of the blood, characterised by a special tendency to intravascular clotting, and that the fits, whether of the nature of *grand mal* or *petit mal*, owe their exciting cause to sudden stasis of the blood-stream in some (generally limited) portion of the cortex, resulting from the blocking of cerebral cortical vessels by these aforementioned intravascular clots. I have already in a paper read at the pathological meeting of the Neurological Society in December, 1905, and published in the *British Medical Journal* March 3rd, 1906, given a short account of my views, but it was impossible in the limit of time at my disposal when reading the paper to deal in any but a very cursory way with many interesting aspects of the question, nor could I then give sufficient details of the microscopical examination of the individual cases.

With reference to material, my cases have been drawn entirely from among the inmates of the Essex County Asylum, and were in a great majority either idiots or imbeciles. The term "imbecile," however, is very elastic and embraces, on the one hand, those little removed from idiocy, and on the other those whose mental capacity is very little below the average of the class from which they are drawn. I have, therefore, roughly classified my imbeciles into three divisions as follows:

(a) *Low-grade imbeciles*.—Those not far removed from idiocy, but who, under favourable circumstances, are just capable of adjusting themselves to simple environments (which the idiot is not able to), and yet are not able to work.

(β) *Medium-grade imbeciles*.—Those who are able to attend to themselves and do simple housework.

(γ) *High-grade imbeciles*.—Those who are able to keep themselves neat and clean, who do their simple work intelligently and well, and in many cases, as I have just said, are not very far below the average of intelligence of their social class. Of my 41 cases, 8 were idiots, 10 were low-grade imbeciles, 3



were medium-grade, and 10 high-grade ; whilst the remaining 10 showed no marked mental aberration except during, or as the result of long-continued, fits.

It would be highly desirable, of course, to compare with this series a series from the brains of those epileptics who were not inmates of asylums ; this, however, it was not possible for me to do. Nevertheless, I believe we shall be able to form a fairly correct estimate of the probable incidence of the pathological changes which I regard as of most importance, in a series of sane epileptics, by a comparison of the pathological incidence in the different classes of my cases.

In the following table I have tabulated the number of instances in which the intravascular clot, the presence of changes in the Betz cells characteristic of imperfect development, and the occurrence of atrophy and sclerosis of different parts of the brain were met with in (1) those who, apart from the effect of their fits, were of average intelligence ; (2) high-grade imbeciles ; (3) low-grade imbeciles ; and (4) idiots :

Class.	Number of cases.	Clot.	Axonal character of Betz cells.	Atrophy and sclerosis.
Weak-minded . . . .	10	9	6	6
High-grade imbeciles . .	10	9	7	7
Low-grade imbeciles . .	10	9	6	6
Idiots . . . . .	8	8	5	5

From this table it will be seen that there is practically no difference in the incidence of these pathological changes, whatever the mental state may have been.

The objections have been raised that the occurrence of the intravascular thrombi on which I lay so much stress is the result of some general inflammatory condition to which the patient succumbs, or that it is the result of the fits and not the cause. An analysis of the relationship which the clot bears to the immediate cause of death in my cases will, I think, go far to remove both these objections.

Status epilepticus was the cause in nine cases, in eight of whom intravascular thrombi were found.

Epilepsy—and by this I mean that the autopsy revealed no obvious cause of death which may or may not have occurred in or immediately after a fit—was the cause in fourteen, in ten of whom the thrombi were found.

Some inflammatory condition (pneumonia, tubercle of lung, peritonitis, or dysentery) was the cause in ten, in all of whom clot was found. Disease of the kidneys (chronic) was the cause in four, in all of whom clot was found.

Thus status epilepticus may occur without thrombi being discovered, and the fits cannot therefore necessarily be the cause of the copious clotting which is sometimes found in this condition. This is still more decisively shown in those cases which have had no fits for years before their death (29, 33, and 36), and where abundant clotting is present.

Those dying from epilepsy, or in *status epilepticus*, were the only ones that did not invariably show intra-vascular clotting. This lends some support to the contention that general inflammatory disorders may be factors in the production of these clots, a supposition I am quite ready to grant, but not that they are necessarily factors; for, as will be shown later on (*vide* Case No. 12), control brains from persons who died from acute inflammatory disease frequently failed to show any signs of intravascular thrombi.

*The regions of the nervous system examined.*—In all but a very few cases the pre-frontal sections were taken across Wernicke's transverse fissure—occipital across the calcarine fissure, the cerebellum from sagittal sections through the left lateral lobe. In all cases the ascending frontal sections were from the apex of this convolution, at right angles to the median line, so as to include part of the paracentral convolution. Three levels only of the cord were examined, from the cervical enlargement, the mid-dorsal region, and the lumbar enlargement.

*Methods employed.*—The tissues from the earlier cases were fixed in saturated sublimate solution for twenty-four hours, then passed through graded alcohols, chloroform, imbedded in paraffin, cut, fixed to the slide by Gulland's method, and stained either by toluidin blue or Unna's polychrome blue. Some sections were counterstained by erythrosin. Latterly I employed absolute alcohol to fix the tissues. If they are immersed for about twenty-four hours in this fluid, changed

two or three times, very little shrinking occurs, and the finer detail of the cell structure is very well shown, better than in sublimate preparations. Sections so prepared are also suitable for the application of micro-chemical tests.

In a few cases Beneke's methyl violet method for the staining of glia was used. For tract degeneration pieces of the cord, after hardening in Müller's fluid, were treated some with osmic acid for the detection of recent degeneration, and others by Weigert's method for old degeneration. For the preparation of these sections, as well as many from the other parts of the central nervous system, I have to thank my colleague Dr. de Steiger, and for great assistance in many other ways in the course of this investigation.

For the detection of phosphorus in the tissues I have employed Macallum's phenyl-hydrazin test, slightly modified in so far as I have not found it necessary to use a Soxhlet apparatus to extract fats, etc. The following is my procedure: sections fixed to the slide by Gulland's method, after extraction of their paraffin, are placed for eighteen hours in a mixture made by dissolving 1 part pure molybdic acid in 4 parts strong ammonia, and adding 15 parts of nitric acid, sp. gr. 1.2, then they are rinsed in distilled water, and a freshly prepared 1 to 4 *per cent.* solution of phenyl-hydrazin hydrochloride is poured over them and left for a few minutes, the sections rinsed, dehydrated, cleared in xylol and mounted in colophonium or Canada balsam. In sections so treated the organic phosphorus stains a bright green.

In the nerve-cells the nucleolus stains a bright emerald green of greater depth than any other part; the chromatin of the nucleus is a very pale green, and the nuclear membrane nearly colourless. The chromatoplasm (Nissl bodies) stains green, somewhat paler than the nucleolus, whilst the achromatic substance is nearly or quite colourless. This reaction is exceptionally well shown in Betz or anterior cornual cells. Degenerated nerve-cells stain an uniform dark green, nucleolus, nucleus, and cytoplasm all alike; on this account they stand out very prominently in contrast to healthy cells. *Ante-mortem* (vital) thrombi stain green of various depths, darkest in the hyaline masses met with either lining or completely filling the lumen or as little free spheres, singly or in clusters. The finely granular clot stains less intensely.

*Post-mortem* clot, especially that the result of alcohol fixation, does not stain green at all.

Leucocytes stain of about the same depth as the granular clot and the clusters of small, round granules of  $1.5$  to  $2\mu$  in diameter, which I believe to be blood-plates, stain as intensely as the hyaline clot. Buckmaster has recently published some experiments which almost conclusively show that these bodies are not elements of normal blood, but are produced either by injury to the plasma within or without the body, or to a much smaller extent are extruded from the erythrocytes. He states emphatically, however, that they exist in pathological blood. Whether they are or are not independent constituents of normal blood does not affect my views as to their *rôle* in epilepsy. Their presence cannot be explained away, and in all probability is closely connected with coagulation, not necessarily massive coagulation. In the same sense as Nissl regards the disposition of the chromatoplasm of nerve-cells as an equivalent picture of health or disease, so here, in a series of sections all treated precisely alike, the presence in smaller or greater numbers of these bodies will possess some pathological significance. Buckmaster quotes Wlassow as stating that an aggregation of these bodies seems to occur when the endothelial lining of an artery is injured, and from this plugging tendency they have been regarded as specific agents for inducing coagulation of the blood.

Sections from thirty-one of the cases were treated by Macallum's method. The coagula and blood-plates usually show quite plainly when stained in the ordinary way with Unna's polychrome blue, but this stain cannot be relied on. If it give a positive picture, well and good; but it may give a negative one, where the phenyl-hydrazin method has shown that a marked amount of coagula and numbers of blood-plates are present.

## PART II.

### SYNOPSIS OF CASES AND DETAILED ACCOUNT OF THE MICROSCOPICAL EXAMINATION OF EACH.

CASE 1.—E. S.—, female. A low-grade imbecile, depraved in habits, restless, troublesome, and spiteful. Her fits were strong and frequent,



occurring either singly or in batches (serial). Died in *status epilepticus*, æt. 18, with a temperature of 103° F.

Autopsy thirty-one hours after death. The encephalon weighed 1309 grammes and showed no special naked-eye abnormality except atrophy and sclerosis of the right cornu ammonis. The liver on microscopic examination showed fatty degeneration and some increase of interstitial tissue. The kidneys also showed this latter change. No other special alterations to note. The ascending frontal convolution and the cornu ammonis of both sides were fixed in sublimate, passed through graded alcohols, sectioned, and stained with erythrosin and toluidin blue.

*Ascending frontal (A).*—Meninges: some slight fibrous thickening in places. Here and there are spots where marked infiltration of the meninges with mononuclear cells is present. The infiltrating bodies are round, oval, square, or elongated, and average 8—10  $\mu$ , but some are 16  $\mu$ . The cytoplasm is fairly dense and homogeneous and stains pink. The nucleus (6  $\mu$ ) may be centrally placed or at one end; it is sharply outlined, showing several chromatin spots connected by threads. In shape it is round, bilobed, or reniform. In some cases there are two nuclei in a cell. Practically no small lymphocytes are to be seen. Between the pia and the surface of the cortex is a fine amorphous epicerebral exudate.

On the surface of the convolution are little buds or excrescences, which consist of fibres crossing in all directions and much denser in some parts than others. Many nuclei are present, varying from 4 to 6  $\mu$  in diameter. The smaller are very dense, but for the most part a central nucleolus and smaller chromatin spots can be made out. Beyond these little glial excrescences there is no sign of a band of sclerotic tissue over the greater part of the surface, but here and there a thin rim is seen, much less than often occurs in the brains of chronic forms of insanity.

The whole extent of the first layer is fairly thickly strewn with small ill-defined glia cells from 8 to 12  $\mu$ , whose nuclei is precisely similar to those just described.

Here and there in this layer are nerve-cells, which although always found in the new-born infant, are not found in the adult, except as an accompaniment of defective development. They represent embryonal nerve-cells.

The second layer is fairly well defined, the cells are numerous and of average size. Many of their nuclei are swollen and clear or "bladder-like." The smaller and medium-sized pyramids are well formed, but in patches here and there are groups of darkly-stained, shrunken forms.

The great majority of the Betz cells are large, with a finely granular condition of the central chromatoplasm and with a nucleus, situated in a very eccentric or peripheral position, but which otherwise shows a normal structure. This form of cell is indistinguishable from an early stage of that which has been termed *reaction à distance*, or (by A. Meyer) axonal reaction. Perhaps it is the same, but, at all events, there are facts which tend to show that it remains in this condition without material alteration, and that it occurs in over 70 *per cent.* of all imbeciles. Very little pigment is present.

The nerve-cells are usually surrounded by large numbers of pericellular elements similar to those to be described around the vessels, which often encroach upon or in some cases completely enter into the nerve-cells.

Meynert's striæ are well marked.

*Vessels*.—Marked engorgement, only very few leucocytes. No structural alteration noted. Around the capillaries in the lymph-spaces there are considerable numbers of cells, with very scanty cytoplasm and round and oval nuclei ( $6\ \mu$ ), which stain uniformly but show darker chromatin particles.

As a rule these elements adhere to the distal wall of the lymph-space, and not to the capillary.

The subcortical nerve-cells, which usually disappear shortly after birth in the human being, are still present in large numbers; e.g., it is possible to count twenty in a low power field ( $\times 100$ ). The cytoplasm of these cells is of an indefinite structure, something like frayed out cotton-wool, but definite chromatoplasm can be detected staining blue in contrast to the spongioplasm, which stains red. These cells rarely exceed  $20\ \mu$  in their longest diameter.

Side (v) showed similar appearances.

*Cornu ammonis*.—Right (atrophied) side: The pyramidal cells were few, shrunken, and darkly stained, especially in the nucleus fasciæ dentatæ.

Many of the vessels are engorged and sometimes ruptured, but, side by side with these, collapsed vessels lying in greatly dilated spaces are found. These dilated perivascular spaces are occupied by a delicate foam-like structure, which shows especially well in sections stained by iron hæmatoxylin. Spider cells are not at all a prominent feature.

Left side: Shows similar appearances to the right, but scattered about in the vessels are darkly stained spheres and mulberry-like masses, and in one instance one of these latter has become impacted in a vessel, and led to its rupture. On one side of this body the vessel is distended with erythrocytes; on the other it is collapsed, and erythrocytes are lying free in the lymph-space.

*Remarks*.—The localised occurrence of the intravascular clotting should be noted; although sections were examined from four different regions of the brain it was only noticed in those from the left cornu ammonis.

CASE 2.—R. B—, female. A high-grade imbecile, employed in a factory before admission. Able to converse rationally and to attend to herself. Industrious. Had frequent single attacks of *grand mal*. Very dull, heavy, and confused after fits.

She died in *status epilepticus*, æt. 18; two years previously had an attack of status, from which she recovered.

Autopsy thirty-one hours after death. Encephalon 1263 gr. The cornua ammonis were not sclerosed, but in the cerebellum were atrophied sclerosed foliæ on the right side along the posterior border,

and on the *left* side in a corresponding position was a meningeal hæmorrhage. The spinal cord was very soft. With the above exceptions the viscera appeared healthy. The following parts were fixed in sublimate and examined microscopically. Ascending frontal (both sides). Cerebellum in the regions referred to above and spinal cord.

*Ascending frontal.*—Meynert's striæ not well marked, probably owing to paucity of cells.

The meninges appeared as if glued to the surface of the cortex, and their engorged bulging vessels were sunk in depressions of the surface. No structural alterations noted in the vessels, but rupture of their walls is evident by the diffused escape of erythrocytes noted between the meninges and cortex. A considerable infiltration of large lymphocytes, as described in Case No. 1, is met with in patches, also numbers of small lymphocytes (4—5  $\mu$ ).

The surface of the brain is undulated, owing to the pressure of the engorged meningeal vessels. No superficial band of sclerosis nor increase of glia-cells seen. Many ruptured capillaries noted and also the occurrence of embryonal nerve-cells.

There appear to be few nerve-cells throughout the cortex, especially in the second layer, which is in consequence very ill-defined. In most cases they are shrunken, rounded, and with few branches, and lie in dilated spaces, their nucleus in all cases being darkly and homogeneously stained. Very few Betz cells seen. They vary, some appearing dark and shrunken, others pale and ill-defined, without visible pericellular space. The nucleus is similar to that described in the other cells. Some of the cells are typically axonal.

*Vessels.*—The majority engorged, others collapsed. Walls of the arteries slightly thickened. An inconsiderable amount of perivascular and pericellular infiltration; in the former situation the cells tend to adhere to the side of the lymph-space and not to the vessel.

Large numbers of sub-cortical nerve-cells.

On one side a copious amorphous epicerebral exudate was observed.

*Cerebellum.*—Right side: Atrophied foliæ. The meninges were somewhat thickened (fibrous), the vessels distended and ruptured. A copious amorphous exudate on the surface of the foliæ. Very few Purkinje cells, and those seen were densely stained. Granules very much reduced in numbers. No appearance of Bergmann's fibres or other evidence of glial overgrowth.

Left side: Although not visible to the naked eye, the foliæ here were also atrophied. Same appearances as on right side, only the number of escaped erythrocytes was much larger.

*Cord.*—Cervical enlargement. Atrophy of one fore-horn; its cells are few in number, shrunken, and darkly stained, with wide pericellular spaces. In the other horn the cells are more numerous and larger, and have a natural appearance, except that their nucleoli are often swollen, measuring 9  $\mu$  instead of 4 or 5  $\mu$ . Lumbar enlargement similar.

Sections from the ascending frontal region and cerebellum were treated with Macallum's phenyl-hydrazin test for phosphorus, but as regards intra-vascular clotting gave a negative result.

CASE 3.—O. D—, female. A low-grade imbecile, subject to fits since

nine years old, obstinate, resistive, and spiteful; dirty in habits. Violent after fits, which were sometimes single and sometimes serial. Was found dead after a fit at the age of nineteen, apparently in robust health the previous day.

Autopsy four hours after death. Encephalon 1309 grammes. Atrophy of convolutions on the right side of the first and second temporal and lower part of ascending parietal and those of the island of Reil. Apart from this the brain appeared natural.

Liver was in a state of fatty degeneration, and both it and the kidneys showed increase of interstitial tissue (microscopically); the other viscera appeared natural.

The ascending frontals, right temporal convolution, medulla oblongata, and spinal cord were fixed in sublimate and examined after staining with Unna's polychrome blue or toluidin blue and erythrosin.

*Ascending frontals.*—Meynert's striæ not so distinct as in normal brain, due to the paucity of nerve-cells. The meninges show slight fibroid changes, and in places some slight infiltration with mononuclear cells (large lymphocytes). The vessels are not unduly distended, and there is no appearance of hæmorrhage. Epicerebral exudate present.

On the surface is a dense, reticulated rim, about  $30\mu$  thick with few nuclei in it, in places raised up into little buds or granulations. Throughout the first layer fairly numerous glia cells are seen; some of these are about  $10\mu$  in their longest diameter, and have a dark, cloudy cytoplasm, and a plump, clear nucleus ( $7-8\mu$ ) with central nucleolus and peripherally-arranged chromatin spots. Others show hardly any cytoplasm, and their nucleus is small ( $6\mu$ ) and darkly stained. The second layer is ill-defined, with only few nerve-cells, and these mostly shrunken and darkly stained, but side by side are others with large, clear, "bladder-like" nucleus. The same patchy distribution of dark, shrunken cells and those with swollen nuclei is found among the small and medium-sized pyramids. The Betz cells are few in number, and some of them show the congenital form, others are ill-formed and darkly stained all over.

*Vessels.*—Some (veins chiefly) engorged, others (arterioles) shrunken, somewhat tortuous, and lying in wide spaces. In the medullary portion some of the vessels lie in great cavities, across which is a very loose reticular structure, and in the big meshes lie masses of pigment (staining dark green with polychrome) and a very few large lymphocytes.

There is no increase in the perivascular or pericellular elements of the cortex. Subcortical nerve-cells numerous, and some are very large ( $50 \times 14\mu$ ).

*Right temporal (atrophied) convolutions.*—Meninges: The arteries and vessels generally dilated and filled with erythrocytes, among which is a rather large proportion of leucocytes. In the pial meshes lie infiltrated cells, arranged below according to their number.

(1) Oval or round nuclei ( $8-9\mu$ ) with dark border, central nucleolus, and peripheral chromatin spots. These apparently are analogous to the nuclei of the pial fibres.

(2) Very darkly stained nuclei ( $4\mu$ ) with a wisp of cytoplasm; small lymphocytes.



(3) Round cells, with dull, smoky cytoplasm ( $8\mu$ ) and lateral nucleus ( $6\mu$ ) which may be reniform; large lymphocytes.

(4) Polymorphonuclear leucocytes.

(5) One mast-cell noted.

In the meshes also lie extravasated erythrocytes and an amorphous deposit.

In the most atrophied parts of the cortex *all* the nerve-cells have disappeared, and the tissue consists of glia cells, with very little cytoplasm but darkly-stained (crimson with erythrosin) fibres. Along the surface of the convolution is a denser rim of glial fibres. In places are small, rounded areas crowded with nuclei resembling small lymphocytes.

Sometimes a vessel is seen within these infiltrated areas. The vessels in the cortex are usually somewhat collapsed and lie in wide spaces, in which is an amorphous deposit and a few cells, chiefly large and small lymphocytes, one or two mast-cells noted, and a few fairly typical plasma-cells, the cytoplasm of which does not, however, show any clear area.

*Medulla oblongata*.—Small granulations on the floor of the fourth, situated away from the centre line. No appearance of glial overgrowth.

The hypoglossal and ambiguous nuclei cells show fairly good stichochrome appearance; nucleus increased in density. The cells of the lateral and gracile nuclei show, as usual, an axonal appearance. In other respects the appearances are similar to those seen in the brain.

*Spinal cord*, only examined by Nissl's method, shows appearances very similar to those described in the brain as regards meninges and vessels.

Anterior horn-cells have a fairly good stichochrome appearance.

Sections from the ascending frontal region tested for phosphorus show the presence of many dark green (degenerated) nerve-cells, among which are most of the Betz cell. Several clumps of dark-green, stained blood-plates were seen filling up the lumen of their containing vessel, also hyaline casts in some of the cortical capillaries.

CASE 4.—E. W.—, female. A high-grade imbecile, subject to epileptic fits from age of fifteen or sixteen. Mother states that she was previously an intelligent child. Her fits were strong and frequent, and occurred singly or in batches (serially). Except just after fits, when she often became maniacal, she was a quiet and industrious girl. Died in *status epilepticus*, æt. 21 (temp.  $102^{\circ}$  F., vasomotor paralysis).

Autopsy five and a half hours after death. The encephalon weighed 1273 grammes. No sclerosis of cornu ammonis. The viscera generally appeared natural.

Pieces from both prefrontal and both ascending frontal lobes, the cerebellum and medulla oblongata were fixed in sublimate and stained as usual.

*Prefrontal* (1).—No thickening of the meninges. Most of the vessels are distended and tortuous, with slight thickening of muscularis. Copious extravasation of erythrocytes, among which are seen also clumps of polymorphs and large lymphocytes (large hyaline cells)



and a very few small lymphocytes. First layer contains relatively few spider-cells, which are very small and shrunken, and no sclerosed surface band.

Second layer of cells is not well defined owing to their sparsity. The cells appear fairly natural except for an occasional one with a large "bladder-like" nucleus.

The pyramidal cells are few in number, generally pale and with ill-defined chromatoplasm. *Here and there are groups of darkly-stained shrunken forms* lying in wide spaces. Just beneath the second layer is the region where the cells are most sparsely scattered, and it is in this region that the greater number of the dark, shrunken cells are met with.

The nuclei of the spindle-cells are swollen and "bladder-like," often bulging out the contour of the body. They contrast sharply with the nuclei of the pyramids.

In places there is a considerable infiltration of nuclei in the pericellular spaces; six or seven may be counted around one nerve-cell.

*Vessels.*—For the most part they are distended with erythrocytes, and blocking up the lumen of many are masses of a hyaline material which stains moderately dark blue with polychrome. Some of the vessels show absolutely no lymph-space, but fit closely up against the matrix; others are surrounded by a wide lymph-space. Some slight thickening of the muscularis of the arteries is noted. Very little nuclear proliferation in the perivascular spaces. In the medullary substance, close to the cortex, are numbers of greatly dilated veins, which are in many cases blocked up by hyaline material or by a finely granular deposit.

The subcortical nerve-cells are small but relatively numerous.

*Prefrontal (2).*—This side does not show the empty appearance of the upper pyramidal region noted in the other side. Fibrin threads and many blood-plates noted in the meningeal vessels. In other respects similar to the first side.

*Ascending frontal.*—Some increase in the breadth of the meninges at the top of the convolutions. They show a loose structure with infiltration of mononuclear cells (large lymphocytes), more marked than in the prefrontal regions.

Vessels distended. Extravasation of erythrocytes and epicerebral exudate. Hyaline coagulum in some of the veins, in the clot are imbedded erythrocytes and an occasional polymorph.

Meynert's striæ well marked, no visible sparseness of nerve-cells. No increase of glia observed in first layer. Some embryonal nerve-cells.

*Nerve-cells.*—Second layer fairly well defined; most of the nuclei are dense and only a few large and clear. The small and medium-sized pyramids are well-shaped but small; nucleus dense, and on the side which shows the intra-vascular clotting often in a condition of homogeneous degeneration (*i.e.* staining densely and homogeneously). A good number of Betz cells are present on one side, only a few on the other. They stain darker than usual owing to the ground substance taking on the colour, but the chromatoplasm is well defined except in some which show central chromatolysis. Very little pigment. The nucleus is generally peripheral, is denser than normal, and in many

cases its lining membrane is thickened at one side. The spindle cells are small, with rather dense nuclei. Pericellular infiltration is a marked feature in all the layers below the second, but chiefly around the spindles: it takes the form of small, darkly-stained nuclei with no visible cytoplasm.

*Vessels.*—The arteries, veins, and capillaries were generally filled with erythrocytes. In some instances an artery was distended in one part and collapsed a little further on. The veins generally showed practically no lymph-space. A solitary mast-cell was noted.

On one side the vessels contained a considerable quantity of hyaline clot, and on this side a small capillary hæmorrhage was seen.

Sub-cortical nerve-cells occurred in large numbers. Around the vessels of the medullary substance were clusters of pigment granules, which stained green with the polychrome. Capillary emboli were often observed.

*Medulla oblongata.*—Meninges and vessels as above. No appearance of glial overgrowth. The hypoglossal cells showed a good stichochrome appearance, with somewhat dense nuclei.

*Cerebellum.*—Condition of meninges and the vessels similar to those in the cerebrum. Bergmann's fibres faintly visible in places. No atrophy of foliæ met with. Purkinje cells sparse, mostly large and pale, with central clear nucleus (sometimes swollen), others small and darkly stained with shrunken nucleus.

CASE 5.—J. R. R.—, male. A low-grade imbecile, dirty in habits, unable to attend to himself. Had very frequent fits, and died in *status epilepticus*, æt. 22.

Autopsy seventeen hours after death. Encephalon weighed 1239 gm. The cornua ammonis were sclerosed and of almost cartilaginous consistency. The thoracic viscera appeared natural. Some commencing cirrhosis of liver and interstitial nephritis. Portions of the ascending frontals, the ascending parietal (of one side), the cornu ammonis, and the cerebellum were saved for microscopical examination. All but the cornu ammonis piece were fixed in sublimate; this was put direct into absolute alcohol.

*Ascending frontals.*—Some fibrous thickening of the meninges, vessels full and prominent. A slight proliferation, chiefly in the dips of the sulci, of lymphocytes, small and large. Amorphous epicerebral exudate. Here and there on the zonal layer is a thick (70—130  $\mu$ ) surface rim of sclerosed tissue, with few or no nuclei, but between this band and the rest of the layer a somewhat closely set row of small glia-cells lie. Glia-cells averaging 15  $\mu$  in diameter, with clear, plump nuclei (6 to 8  $\mu$ ) are scattered throughout the layer. Not infrequently there are two nuclei to a cell. A few embryonal nerve-cells seen. Meynert's striæ well marked.

*Nerve-cells.*—The second layer is ill-defined, owing to the cells being few in number, but they appear natural and their nucleus is not swollen. There is a great sparseness of cells in the upper part of the pyramidal layer, but they are of a fairly good shape, with a clear but not swollen nucleus.

The Betz cells are few in number; they are small and their ground-

substance stains; the nucleus is central and clear. Very little pigment. Only a few show axonal characteristics. The spindle-cells are not prominent; they usually have a clear nucleus.

Darkly stained, shrunken, sub-cortical nerve-cells are numerous.

No marked pericellular infiltration.

*Vessels*.—Show the usual condition. The venules swollen out with erythrocytes and with no visible lymph-space; the arterioles less distended and with more or less marked lymph-space; some of the arteries are collapsed and tortuous, with slight thickening of the muscularis. A hyaline coagulum coats the inner wall in places and some deposition of fibrin threads.

On one side there is an appearance as though the convolutions had become fused to one another in the sulci. (See also Case 14.) Nothing calling for further remark in the ascending parietal section, except a small hæmorrhage (microscopic) in the cortex.

*Cornu ammonis*.—The main feature to note is the presence of very shrunken, darkly-stained pyramids lying in very wide spaces. No appearance of any active glial overgrowth.

*Cerebellum*.—Meninges, vessels engorged, extravasation of erythrocytes, copious amorphous exudate. At the bottom of the sulci there is a moderate infiltration of lymphocytes (large). No marked atrophy of foliæ noted, but in places the granules are manifestly decreased in number.

Bergmann's fibres well marked. Purkinje cells few and shrunken, with no chromatoplasm. Nucleus generally dense and distorted.

Clumps of hyaline clot and blood-plates observed in the veins.

CASE 6.—T. H. S.—, a married man, and a "clerk" by profession, a case of "acquired epilepsy." During his residence here was noisy, violent, and destructive, and had but few fits. Died of colitis, æt. 36.

Autopsy nineteen hours after death. Encephalon weighed 1229 grm.; *both cornua were sclerosed*. Pieces of the ascending frontals and ascending parietals of both sides were fixed in sublimate and stained as usual. Slight fibroid thickening of meninges and practically no infiltration of cells. Marked extravasation of erythrocytes and epicerebral exudate. Maynert's striæ well defined. No increase of glia-cells or other abnormal features in the zonal layer.

*Nerve-cells*.—In places the second layer is very ill-defined owing to sparseness of cells. In some parts the individual cells have a natural appearance, in others they are shrunken and darkly stained. There is in places considerable diminution in the number of the pyramidal cells in the upper part of the third layer. The cells vary, some fairly natural, others with swollen, "bladder-like" nucleus, and others (in groups) shrunken and darkly stained. There are a fair number of Betz cells present, and they all show appearances similar to a somewhat advanced condition of axonal reaction—*i.e.*, with practically complete disappearance of chromatoplasm, and the lateral nucleus compressed and increased in density. In some cases they stain uniformly and very darkly, so that all interior detail, even the nucleus, is obscured. They contain very little pigment. The spindle-cells are in good number and resemble the others. They are surrounded by pericellular elements in considerable number.

*Vessels.*—Several small capillary hæmorrhages noted in the cortex. The arteries are generally nearly or quite empty and very tortuous, lying in wide lymph-spaces. The veins are usually engorged and show no lymph-space. Around the capillaries, lying free in the lymph spaces, are a considerable number of small round nuclei. Two or three mast-cells seen. Mulberry-shaped masses of hyaline clot and spheres are met with in the vessels, together with considerable numbers of blood-plates.

Numerous subcortical nerve-cells, as a rule small and with rather dense nuclei.

*Remarks.*—Although this man must have been from the nature of his employment of average intelligence, yet his brain showed all the characteristics of defective development, and in addition he had a narrow, badly-shaped palate.

CASE 7.—C. C—, male. A low-grade imbecile. Bedridden for some months before his death. His fits were single ones, and chiefly by day, and he rarely had more than one fit in a day. He died of pulmonary tubercle, æt. 32.

Autopsy twenty-five hours after death. Brain anæmic; sclerosis of left cornu ammonis; no other morbid features noted. Encephalon 1260 grammes.

Pieces from the prefrontal, ascending frontal, calcarine fissure convolutions, and cornu ammonis of both sides, and cerebellum were fixed in sublimate and stained as usual.

*Prefrontal.*—The meninges and the zonal layer appear normal. Under a low-power view the Meynert's striæ are well defined, and there appears to be no diminution in the number of nerve-cells.

The second layer is fairly defined, the individual cells are small and darkly stained with homogeneous nuclei. The pyramidal and spindle-cells are of the same character. No marked proliferation in the pericellular spaces.

*Vessels.*—Some slight thickening of the arteries, which are tortuous, nearly empty, and lie in wide spaces. The veins are engorged and show no lymph-spaces. In many of the vessels, especially those of the medullary substance, there are masses of hyaline and granular coagula and blood-plates.

In sections from this region treated with Macallum's phenyl-hydrazin test for phosphorus numerous blood-plates (green) were visible in the vessels, and in places these appeared to have amalgamated into a granular substance entirely filling the lumen.

*Ascending frontals.*—Meninges healthy, a considerable quantity of epicerebral amorphous exudate. Meynert's striæ well defined.

Zonal and second layer as in prefrontal region. In patches in the upper region of the pyramidal layer (third) there is considerable diminution in the number of nerve-cells. The majority of those present are of normal shape and their nucleus is normal, but here and there are groups of the dark, shrunken forms, and occasionally a cell is seen with swollen and "bladder-like" nuclei.



Very few Betz cells seen.

A slight increase in the number of pericellular elements, chiefly in the spindle layers. Numerous subcortical nerve-cells.

*Vessels*, as in the prefrontal region. Hyaline coagula, in some cases entirely filling the lumen of a vein, are noted. In the medullary substance there is pigment around some of the vessels, staining dark green with polychrome.

*Region of the calcarine fissure*.—The meninges and cortex show a healthy aspect; some erythrocytes are seen extravasated beneath the pia.

*Cornu ammonis* (left) quite similar to that described in Case 1, but no intra-vascular clot noted. On the right side microscopic hæmorrhages noted in the cortex.

*Cerebellum*.—No atrophied foliæ seen. Extravasation of erythrocytes in meninges. In places very slight infiltration of lymphocytes.

Bergmann's fibres not visible. Purkinje cells few in number and similar in general appearance to the pyramidal nerve-cells.

CASE 8.—J. H—, male. Probably congenitally weak-minded, but possessed sufficient intelligence to earn his living as a hawker. Talked coherently, and could give a good account of his past. Typical epileptic speech. Died, æt. 42, of peritonitis, the result of a perforation in the transverse colon.

Autopsy twenty-three hours later. In the left parietal region the meninges were opaque and nearly  $\frac{1}{4}$  inch thick over the sulci. On section they appeared as a firm yellow substance. The cortex beneath was firm and adherent to the meninges.

The left cornu ammonis was sclerosed. The brain generally was firm.

The large intestines showed extensive colitis. The liver was fatty. Purulent matter in the peritoneal cavity.

Pieces from the left parietal region only were fixed in sublimate, and when sectioned were found to be quite gritty and blunted the knife.

This condition was due to numerous vitreous masses lying in the meninges and in the most superficial layers of the cortex. On addition of hydrochloric acid they dissolved with effervescence.

*Meninges*.—At the summits of the convolutions in the meshes of the pia arachnoid are numerous small deposits of hyaline material, which stain a rather deep blue with either toluidin or polychrome blue, and large multi-lobulated masses of the same material, which have in part undergone vitreous changes. In this region there is also a very marked infiltration with cells, apparently large and small lymphocytes, chiefly the former. In the sulci this infiltration is not marked, and here the thickened pia consists of a densely fibrous mass. The arteriole walls are enormously thickened, all the coats participating in the change, especially the muscular and the inner. The walls of the veins do not appear to be thickened. Both arteries and veins are filled with blood.

In the zonal layer there are small vitreous deposits with radial fractures and also numerous hyaline masses, which stain deep blue and often show a vitreous centre. There is no appearance of any glial overgrowth.

Meynert's striæ are well defined, and the nerve-cells are numerous





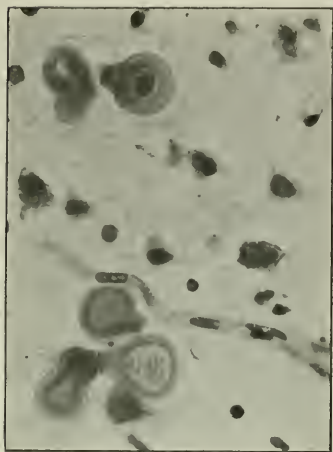


FIG. 1.

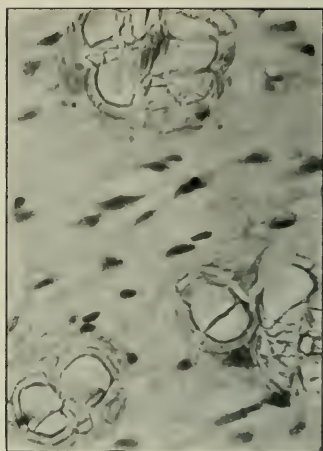


FIG. 2.

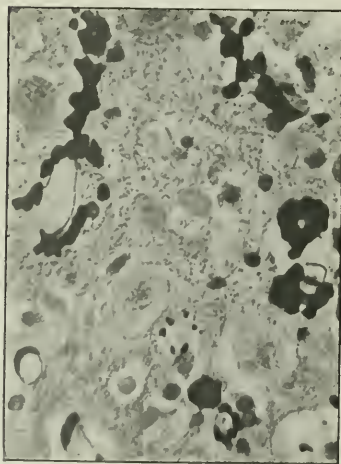


FIG. 3.

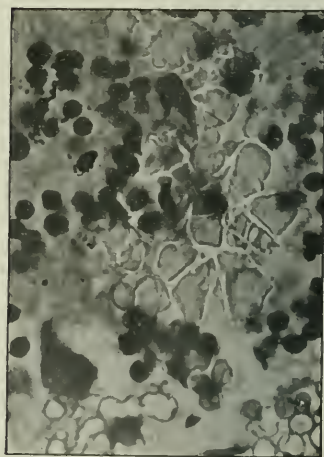


FIG. 4.

To illustrate Dr. JOHN TURNER's paper.

and of a normal shape. They all appear to be in a condition of acute cell change (pyrexial), their nucleus somewhat angular, darkly and uniformly stained. No marked increase of pericellular elements.

Subcortical nerve-cells small, but in fair number.

Beyond some thickening of the walls of the cortical arteries there are no marked structural changes in the vessels. A few mast-cells were noted about the vessels, both in cortex and meninges.

The vitreous and hyaline deposits were very numerous in the upper portion of the third layer. From a study of transitional forms it was possible with a considerable degree of certainty to trace their origin and metamorphoses. Inside the vessels were hyaline spheres and lobulated masses from 6 to 8  $\mu$  and more in diameter, which stained pale blue with either toluidin or polychrome blue. In some places *outside* the capillaries were closely ranged in the lymph-spaces rows of quite similar-looking bodies, with here and there a larger sphere or dumb-bell-shaped body apparently formed by fusion of the previously mentioned spheres; some of these had undergone vitreous changes in their centre. Again, in both the perivascular spaces and lying free in the matrix were starch-like bodies (21  $\mu$  or more in diameter) with concentric markings (see Fig. 1). These stained blue, except in the central parts of some which had undergone the vitreous change. In the last stage the deposits were much larger and more irregularly shaped; they showed a large glass-like centre with radial fractures, and a rim of material which still stained blue (see Fig. 2). There is no appearance of any glia proliferation in the cortex.

In the medullary substance there is a marked increase of nuclei, especially alongside the capillaries. These nuclei stain very densely, measure 4 or 5  $\mu$ , and sometimes lie two or three deep in the lymph-spaces.

*Remarks.*—The chief feature of interest in this case is the presence of the vitreous bodies, unassociated with any appearance of irritation in the cortex, and their probable derivation from the same material, which is so frequently found in the form of intra-vascular clots. It must be assumed, if this is correct, that there was a transudation of the plasma substance (nucleo-proteid) which coagulated after it had left the vessels. I have met with a similar condition in the cerebellum of an epileptic (*vide* Case No. 15), and also in the brain of a general paralytic with a condition which was apparently an early stage of the change, where enormous numbers of the small hyaline spheres lined the lymph-spaces of the capillaries in a limited region of the calcarine cortex (<sup>1</sup>).

Two epileptics (not included in this series) had gross calcified bodies deposited—one in the cortex of the island of Reil and the other (the size of a hazel-nut) in the pons, just beneath the floor of the fourth ventricle.

Possibly these bodies were of similar origin to the vitreous bodies here described.

It may be noted that in sections treated with Macallum's test for phosphorus these extra-vascular deposits stained a fairly deep green, with the exception of the large vitreous bodies, and in their case there was generally an external rim or band which still took on the green colour.

CASE 9.—W. F.—, male. An agricultural labourer; fits since birth; was subject to batches of severe fits every two or three months, and during these periods was violent and maniacal. He died after a severe fit whilst suffering from typhoid fever, æt. 34.

Autopsy nine hours later. The encephalon, beyond sclerosis of both cornua ammonis, appeared natural.

Recent pleurisy of left side.

Pieces from the prefrontal, ascending frontal (both sides), medulla oblongata, and spinal cord were fixed in sublimate and stained in the usual way; pieces of the spinal cord were also fixed in osmic acid.

*Prefrontal.*—The meninges are structurally natural, their vessels engorged and containing a relatively large proportion of lymphocytes, both large and small. Marked extravasation of erythrocytes.

The zonal layer shows in places a narrow sclerosed rim, but it contains very few glia nuclei.

*Cells.*—The second layer is ill-defined and the cells few, but Meynert's striæ are fairly shown. The nerve-cells generally are small, darkly stained, and with a shrunken, angular nucleus, which is often homogeneous and dense. The pericellular spaces are wide, but there is very little pericellular infiltration.

*Vessels.*—As usual, veins engorged, arteries empty. Many small vessels in the cortex have ruptured. They contain, as in the meninges, a large number of large lymphocytes, and also numerous blood-plates, discrete and in clusters.

*Ascending frontals.*—Meninges natural. Zonal layer shows no increase of glia-cells, except in places near the surface. In one section there is a small glial bud. Embryonal nerve-cells noted.

Meynert's striæ well defined. Nerve-cells well shaped and not apparently diminished in numbers. Here and there are the usual patches of darkly stained, shrunken forms. About a half of the Betz cells show the appearances characteristic of developmental defect. The others are normal. Pigment in excess for his age. A considerable proliferation of pericellular elements. Numerous subcortical cells.

*Vessels.*—Precisely similar to those in prefrontal region. Some of the veins in the medullary substance are filled up with a hyaline coagulum.

*Medulla oblongata.*—Some sclerosis of the olives, very numerous large lymphocytes noted in the vessels, some of which have a distinctly spindle shape. Ruptured vessels noted. The hypoglossal cells show a fairly good stichochrome appearance, but are somewhat shrunken.

*Spinal cord*.—Cervical and lumbar enlargement, no marked changes in the nerve-cells and meninges. No tract degeneration visible in osmic acid preparation.

*Remarks*.—The large number of lymphocytes seen in the vessels is probably a result of the typhoid fever. (See "Rôle of the Lymphocytes," W. G. MacCallum, *Brit. Med. Journ.*, September 10th, 1904.)

CASE 10.—M. E. L—, female, a high-grade imbecile, fits since twenty, was excited, abusive, and spiteful, used stereotyped and meaningless phrases. On admission her knee-jerks were exaggerated and her pupils equal and reacted normally to light and on accommodation. Ultimately her knee-jerks were absent and her pupils nearly rigid to light. At one time she quite lost the use of her lower limbs, but later on regained her ability to walk. Her fits were slight and infrequent; would go for a month or so and then have two or three. Her eyes became fixed, she lost consciousness, frothed at the mouth, and fell down. No convulsions of the limbs; the fit was over in a few seconds; they got more frequent latterly. She died of chronic Bright's disease, æt. 32.

Autopsy twenty-seven hours after death. Encephalon = 1140 gm. Some shrinking of the convolutions of the vertex. No sclerosis of the cornua ammonis. The olivary bodies appeared sclerosed. Spinal cord very firm. Microscopical examination of the liver showed thickened capsule and marked fatty degeneration.

Pieces from the ascending frontal, ascending parietal, the cortex of the calcarine fissure, the medulla oblongata, cerebellum, and spinal cord were fixed in sublimate and stained as usual. Pieces from the cervical and lumbar enlargements were hardened in Müller and stained in osmic acid.

*Ascending frontal*.—Meninges and zonal layer appear normal.

*Nerve-cells*.—Meynert's striæ well marked. Second layer well defined, some slight diminution in number in the outer half of the third layer. The Betz cells are in good number, and practically all show axonal characteristics, with some excess of yellow pigment. The usual patches of shrunken, darkly-stained cells are met with in all the cell-layers. There is a noteworthy increase of nuclei in the pericellular and perivascular spaces of the capillaries and small vessels, which tend to adhere to the wall of the space.

*Vessels*.—As usual, veins and capillaries engorged. Intra-vascular clotting in the form of fibrine and hyaline masses, entirely blocking up the lumen, is met with. (The hyaline material gave a blue colour when tested for iron with ferrocyanide of potassium.) Subcortical nerve-cells numerous.

*Top of ascending parietal* showed similar appearances. Beneath the meninges were seen extravasated erythrocytes.

*Calcarine fissure cortex*.—Meninges natural. In the zonal layer there was a slight increase of small glia-cells in patches, and a narrow sclerosed rim.



The nerve-cells were numerous and of normal shape. Some of the large cells show axonal characters. The vessels are similar in their contents and general appearance to those described in the ascending frontal region.

*Medulla oblongata*.—Foam-like exudate beneath the meninges. Small ruptured vessels seen in the nervous substance. The hypoglossal cells show a natural stichochrome appearance, but are rather shrunken. The cells of the olives (sclerosed) were very shrunken and darkly stained, and the matrix of these regions was beset with small glia-cells. Vessels as in ascending frontal.

In specimens stained with osmic acid after hardening in Müller's fluid the whole of the olivary bodies are studded with small ( $1-3\mu$ ) black spots, and the cells are heavily pigmented (light brown). The vessels lie in wide spaces, across which stretches a delicate foam-like exudate, stained a very pale brown, and in its meshes are large, empty, oval, bladder-like bodies ( $18\mu$ ), with black borders. Many of these have a crumpled-up appearance.

One or two recently degenerated fibres noted in the pyramidal tracts, which appear otherwise normal.

*Cerebellum*.—Meninges natural. Bergmann's fibres are visible over a considerable extent of the molecular layer. The Purkinje cells are few in number, and many are shrunken and darkly stained all over, nucleus included. A folium, which was atrophied along one side only, was discovered on microscopical examination, although not seen at the autopsy.

The vessels were similar to those of the cerebrum.

*Spinal cord*.—Cervical enlargement. The fore-horn cells are shrunken and darkly stained, but show a stichochrome appearance, and are not axonal in character. Nucleus increased in density. Central canal obliterated by proliferation of its lining endothelium. The column of Goll stains darker with the erythrosin than Burdach's column, and in the former region there is a slight increase of glia nuclei. In the lumbar enlargement the fore-horn cells are not shrunken and appear natural. The central canal is obliterated.

The specimens stained in osmic acid show old degeneration (visible to the naked eye after hardening in Müller's fluid) of Goll's columns in both cervical and lumbar regions, and scattered thickly throughout Goll's and Burdach's columns are recently degenerated fibres (Marchi reaction). The cornu-commissural zone is practically free from degeneration. The crossed pyramidal tracts in both regions show a few recently degenerated fibres.

*Remarks*.—The foam-like exudate which has been referred to already, in all the cases examined, was noted long ago (1859) by Schroeder van der Kolk, who designated it an albuminous exudate, and laid great stress on its importance. He further stated that it may undergo fatty degeneration. The sections of the medulla oblongata in this case, which were stained in osmic acid, appear to support this view, for bound

up with this exudation were bodies which appeared to be of a fatty nature. Sclerosis of the medulla oblongata was a feature which Schroeder van der Kolk considered of great importance in the pathology of epilepsy; and whether this is so or not it must be remarked that many of my cases showed this change, more especially, as in the present case, in the region of the olivary bodies.

CASE 11.—A. T. D—, male. An idiot, does not play, sits all day, probably not able to walk, although the notes do not say so. He had frequent and strong fits, chiefly nocturnal. Died of pulmonary tubercle, æt. 15.

Autopsy twenty-seven hours after death. The meninges were slightly milky in the prefrontal region and along the sulci generally of the vertex. The cortex was a slaty colour in places. The left cornu ammonis was sclerosed.

There was a small hæmorrhage and caseous deposit in the right caudate nucleus, and a small abscess about the size of a pea in the posterior part of the right temporal lobe. Encephalon weighed 1112 gm.

Pieces from the prefrontals, cornua ammonis, medulla oblongata, and cerebellum were fixed in sublimate and stained as usual.

*Prefrontal.*—Very considerable fibroid thickening of the meninges, and extravasation of erythrocytes beneath them. The meshes of the pia are infiltrated with large lymphocytes in considerable numbers. A foam-like epicerebral exudate is present. Most of the vessels contain masses of fibrin which often enclose in their meshes erythrocytes and lymphocytes. The zonal layer shows no increase of glia-cells or sclerosed rim.

*Nerve-cells.*—The second layer is very badly defined, and in places no cells, only empty spaces, are visible. The cells generally are shrunk and darkly stained with small, dark, homogeneous nuclei. No marked infiltration in the pericellular spaces. Many subcortical nerve-cells.

*Vessels.*—In the usual condition as regards distension. There is a considerable amount of intra-vascular clot. The number of blood-plates is large. In sections treated with Macallum's phenyl-hydrazin test for phosphorus the clot, fibrin, hyaline and granular, and the blood-plates take on a green colour.

*Ascending frontals.*—Very considerable fibroid thickening of the meninges over the convexity of the convolutions. In the deeper layers some large lymphocytes are present, and there is a fairly copious epicerebral exudate. The vessels contain a quantity of fibrin threads.

In the zonal layer there is a considerable increase of small glia-cells and in places a sclerosed rim (40  $\mu$  thick).

*Nerve-cells.*—Second layer ill defined, cells diminished in number, both in this and the upper part of third layer. They are fairly well formed.

The Betz cells are numerous, small, rather darkly stained, and show little or no chromatoplasm; nucleus in some small and dense, in others

clear and natural; very often the nucleolus appears enlarged (6 or 7  $\mu$ ). All the cells show the characters of somewhat advanced axonal reaction. Not much pigment. No marked pericellular infiltration.

*Vessels*.—Veins not markedly engorged. Blood-plates in large numbers.

Careful inspection with a high power shows a very common distribution of small hyaline masses in the form of spheres of 10  $\mu$  in diameter, which appear to have been formed by the coalescence of still smaller bodies. In some cases the clot takes the form of long (30  $\mu$ ) cylindrical rods, completely blocking up the capillary in which they lie.

Numerous subcortical nerve-cells.

*Cornua ammonis*.—It is not necessary to describe in detail the appearances, as they are quite similar to those previously described. In the left subiculum was a tiny patch of extravasated polynuclears, representing in all probability the origin of a small abscess. Intravascular clot, in the form of spheres and long cylinders (90  $\mu$ ) in the capillaries is prominent, and many blood-plates are visible in the vessels.

*Medulla oblongata*.—Hypoglossal cells natural. The majority of the olivary nerve-cells are shrunken, distorted, darkly stained, and heavily pigmented.

Extravasation of erythrocytes beneath the membranes. Occurrence of emboli as in other parts.

*Cerebellum*.—Meninges as in cerebrum. No appearance of Bergmann's fibres: in one spot is a minute collection of free polynuclears (beginning of small abscess).

A small part of one folium is atrophied, and shows the characters previously described in this condition.

*Vessels*.—Similar to those seen in cerebrum.

CASE 12.—E. S—, female, married, second child born day before admission: has had epileptic fits ever since the age of seventeen, following the birth of her first child. Addicted to excess of alcohol. Admitted in an acutely maniacal state, which lasted for a week or two. A great strong woman, quiet, weak-minded, and industrious, except after her fits, which were frequent and generally at night (single fits). Then she was quarrelsome and very violent. During the last few months of her life her fits were more frequent, and generally of the nature of *petit mal*. In her last illness she had a "strong" fit at 9.30 p.m., after which she got out of bed and walked about, spoke to the nurse, and retched violently. The next morning, when asked if she wished to get up, said, "I wish to God I could." All day she laid huddled up and spoke very little, but recognised her mother. At 10 p.m. seemed to have another fit, with twitching of the limbs and head. Limbs flaccid, draws up her feet when they are pricked. Temperature varied between 100° and 103.4° F. Remained in a comatose state for three days and then died, æt. 25.

Autopsy two and a half hours later. Encephalon 1316 grm.; beyond engorgement of the meningeal veins it showed no naked-eye lesions.

What appeared like two recent hæmorrhages were found in the cord. One, the larger, in the upper cervical region, which occupied about an inch of the meninges, had ploughed up the posterior half of the cord

in an oblique direction, leaving the right anterior cornua nearly intact and completely destroying the left. The smaller one ( $4 \times 3$  mm.) occupied the antero-lateral tract on the left side in the mid-dorsal region.

Both lungs were in a state of grey hepatitis. The liver was congested and the kidneys natural (verified microscopically).

Pieces from the prefrontal, ascending frontals, calcarine fissure cortex, medulla oblongata, cornu ammonis, cerebellum, and spinal cord were fixed in alcohol and stained as usual. The cord was hardened in Müller's fluid.

*Prefrontal.*—Meninges natural, except for a slight infiltration with large lymphocytes in places. The vessels nearly all contain abundant fibrin, hyaline spheres, and blood-plates. Epicerebral exudate present.

The zonal layer has in places a sclerosed rim 50 to  $70\mu$  thick. It appears very wide, shows no marked increase of glia-cells, and is limited internally by cells with the characteristics of those of the third layer, and nearly all the second layer elements seem to have disappeared. Beyond this there is no appreciable diminution in the number of the nerve-cells, many of which contain a large, "bladder-like" nucleus, but are otherwise normal. No groups of dark, shrunken cells noted. The vessels show no structural alteration; veins engorged. Both in sections stained in polychrome and those treated for phosphorus the amount of intra-vascular clotting is very marked, and also the number of blood-plates. It is chiefly in the capillaries and smaller vessels that the thrombi are noticed in the form of long, hyaline cylinders, blocking up the entire lumen of a vessel, single or aggregated spheres and granular masses; and in the sections treated for phosphorus, the two former varieties—and the blood-plates as well—stain dark green, and the latter a paler green.

Not many subcortical nerve-cells seen.

*Ascending frontals.*—Meninges natural. The zonal layer shows no sclerosed rim or increase of glia cells, and is not wide. Nerve-cells: the second layer is fairly well marked; its cells, as well as those of the other layers, have a natural appearance, except that in many cases the nucleus is large and "bladder-like." The Betz cells are numerous, large, with well-marked central chromatoplasm and large (often swollen), clear nucleus, and enlarged ( $7\mu$ ) nucleolus. They all show axonal characteristics. No pigment. Not many subcortical nerve-cells seen.

The vessels are similar to those in the prefrontal regions, and, as there, intra-vascular clotting is a very marked feature.

*Calcarine fissure cortex.*—The section presents a normal appearance, except for a small cortical hæmorrhage and intra-vascular clotting (much less marked than in the two preceding regions), which gives a positive reaction when tested for phosphorus.

*Cornu ammonis.*—Beyond some increase in the number of glia cells and shrinking and dark staining of the cells of the nucleus fasciæ dentatæ and granule layer, there were no structural appearances calling for remark.

Intra-vascular clotting, chiefly in the form of hyaline spheres and lobulated masses, was a very marked feature. A small vessel in the cortex of the subiculum had ruptured and was blocked up by a hyaline mass which partially protruded through the ruptured wall, the peri-



vascular space was distended and filled with erythrocytes, and lying in it was a hyaline thrombus, evidently in connection with that within the vessel. One of the main nutrient arteries was found to be extensively obstructed by a partially organised clot, which, in its deposition around the inner wall, had reduced the lumen of the vessel in a very marked degree.

*Cerebellum*.—Showed no structural alteration. The Purkinje cells were large and numerous. Intra-vascular thrombi and blood-plates in large amount, which gave a positive reaction when tested for phosphorus.

*Medulla oblongata*.—The only structural alteration calling for notice is, the shrunken and darkly-stained condition of the nerve-cells of the olivary bodies. Intra-vascular thrombi as in other regions.

*Spinal cord*.—Upper cervical region. The lesion here was found to be an angioma of the meninges, which had ruptured and ploughed up the posterior two thirds of the cord in an oblique direction, so that whilst the greater portion of the right anterior cornu had escaped, the entire left was destroyed. The cells which had escaped destruction in the horns showed a fairly normal appearance.

The lesion in the mid-dorsal region was also found to be a small angioma, occupying the antero-lateral tract on the left side, and not implicating the grey matter. It was composed of a number of dilated spaces filled with erythrocytes, blood-plates, and clot, chiefly in the form of clumps of fibrin threads. The walls of most of these spaces were extremely thin, but sometimes they were thicker, and consisted entirely of fibrous tissue, which occupied also the space intervening between several of the blood cavities.

In the specimens stained with osmic acid the anterior forehorn-cells of both cervical and lumbar regions were heavily laden with a nearly black pigment. The nucleolus in the cells of the lumbar region was enlarged ( $8\mu$ ).

There was no evidence whatever of any tract degeneration, recent or old.

*Remarks*.—It might be suggested that the large amount of the intra-vascular clot found in this case was associated with the pneumonic condition, and had no relation to the epilepsy, but this is rendered very improbable from the study of sections from other cases not subject to epilepsy dying from pneumonia—*e.g.*, sections from the ascending frontal convolution, the cornu ammonis, and the cerebellum from a woman *æt.* 55 in a state of acute mania, who died from lobar pneumonia, were prepared in the same way and used as a control. In *none* of these sections was intra-vascular clotting met with. In another control case, an idiot without epilepsy, who died of broncho-pneumonia, there was a similarly negative appearance as to clotting, with the exception of a small amount of fibrin in one or two of the vessels.



*Angeiomata*.—I have met with twelve instances of this condition, all small (covering an area from size of split pea to a sixpence), in the central nervous system. Zeigler states that they are not uncommon in the meninges of the cord and the brain, and that in the latter region they do not as a rule form actual tumours, but merely small reddish specks. Virchow suggested that they were of congenital origin.

The following table gives the sex, age, forms of insanity, and the site of the lesion in my cases.

Three other cases in my knowledge, two reported by Drysdale and one by Creite, all occurred in epileptics.

From this series it would appear as though epileptics were especially prone to this condition; and whilst ready to admit that congenital defect may be a predisposing factor in their production, their apparent rarity in imbeciles not subject to epileptic fits points to the necessity of some exciting cause, which, I suggest, is rise of blood-pressure due to an obstruction in the blood-stream on the venous side of the circulation, leading to enormous dilatation of the capillaries, etc.

No.	Sex.	Age.	Form of insanity.	Situation.
1	Male	35. about	Imbecile, epileptic	Pons.
2	"	34	? Epileptic	Spinal cord.
3	Female	24	Adolescent mania	Pons.
4	"	25	Imbecile, epileptic	Spinal cord and meninges of cord.
5	"	63	Melancholia	Cerebral cortex (left parietal), pons.
6	"	43	Imbecile, epileptic	Pons.
7	Male	43	General paralysis	"
8	"	42	Melancholia	"
9	Female	66	Acquired epilepsy	"
10	Male	48	General paralysis	"
11	Female	43	Congenital defect without epilepsy	"
12	Male	40	Imbecile; epileptic	Medulla and adjoining cor- tex of pre-frontal lobe.

CASE 13.—W. P. A.—, male. A high-grade imbecile, restless and troublesome, and during and after fits acutely maniacal. Frequent fits. Died of colitis, æt. 29 (temperature during his illness ranged from 102.8° to 99° F.).

Autopsy nine hours after death. Encephalon 1469 grm. Small brown surface softenings of orbital lobes in the region of each olfactory bulb. Marked sclerosis of left cornu ammonis. Except for these

findings the brain appeared natural. Pieces from the orbital, ascending frontal, cornu ammonis, medulla oblongata, cerebellum, and spinal cord were fixed, some in alcohol and some in sublimate, and stained as usual. The cord was placed in Müller's fluid for subsequent treatment with osmic acid.

*Ascending frontal*.—Considerable fibroid thickening of the arachnoid; no infiltration. The zonal layer shows embryonal nerve-cells, but otherwise is natural.

*Nerve-cells*.—The second layer is ill-defined, owing to the small number of its cells, and there is some diminution in the number of pyramids in the outer half of the third layer. The cells generally are shrunken and darkly stained with the exception of the Betz cells, which are numerous, large, with well-defined peripheral chromatoplasm, and clear, laterally disposed nucleus (congenital form). Most of them contain, for a man of his age, a large amount of yellow pigment.

In the sections treated for phosphorus the degenerated pyramids stand out clearly in groups, staining all over (nucleus and cytoplasm) a dark green.

*Vessels* as usual. A small cortical hæmorrhage noted. Blood-plates numerous, and considerable amount of intra-vascular thrombi, which stain dark green in Macallum preparations.

Numerous sub-cortical nerve-cells.

*Cornua ammonis*.—On the atrophied (left) side the cells of the dentate fascia are extremely degenerated, few and shrivelled; on the other side they appear fairly healthy. There is also an increase of glia-cells in the left dentate fascia. Intra-vascular clotting as in the previously described region.

*Orbital convolution*.—In the olfactory groove the meninges were thickened, and contained a number of large brown granule-cells. The adjacent cortex was destroyed, and granule- and glia-cells were present, the latter in large number. The vessels for the most part were collapsed and lying in wide spaces. Not much coagulum noted.

*Medulla oblongata*.—Hypoglossal cells natural; olivary body cells degenerated. Coagula as in other regions.

*Cerebellum*.—No special alterations to note except degeneration and diminution in number of Purkinje cells. No Bergmann's fibres seen. No atrophied foliæ. Clot in vessels quite a marked feature.

*Spinal cord*.—Meninges show fibroid thickening and extravasation of erythrocytes. Anterior cornua cells somewhat contracted and dark, but show a fairly good stichochrome aspect; not much pigment. The nucleolus is often large (8–9  $\mu$ ). The central canal is patent.

In sections stained with erythrosin the columns of Goll in the cervical region are perceptibly darker than those of Burdach. Quite a large amount of intra-vascular clot noted. In preparations stained in osmic acid there was no evidence of any recent degeneration, and save for a slight pallor in the middle zone of the posterior internal columns in the lumbar region no signs of old degeneration. This pallor appeared to be due to a paucity in the number of myeline fibres, with a corresponding increase of the connective tissue of the matrix.

CASE 14.—A. H. O—, female. An idiot (deaf, dumb, and unable to

articulate); was able to walk in a very imperfect way. Would scream for hours together. Had a great number of fits, both single and serial, and occasional attacks of *petit mal*. Died in *status epilepticus* (temperature  $100.4^{\circ}$  F., falling to subnormal), æt. 34.

Autopsy eight and a half hours after death. In places the cortex of the left prefrontal and right parietal had a mottled and ill-defined aspect. General shrinking of the convolutions; sclerosis of the left cornu ammonis and the olives. Cerebellum and cord very firm and tough. Encephalon 945 grm.

When microscopically examined the liver and kidneys were found to be in a state of marked fatty degeneration. Pieces from the ascending frontals, right parietal, cornu ammonis, medulla oblongata, cerebellum, and spinal cord were fixed, some in alcohol, and some in sublimate, and stained as usual. The spinal cord was put into Müller's fluid for later examination.

*Ascending frontals.*—Considerable fibroid thickening of the arachnoid and a foam-like epicerebral exudate; in places a noticeable infiltration with large lymphocytes. The zonal layer on the left side shows a slightly raised granulation ( $600\mu$  long and  $60\mu$  deep) containing a number of glia cells with small, dark nuclei. Elsewhere there is no appearance of a sclerosed rim, and the glia nuclei throughout the layer are few. Embryonal nerve-cells seen. On the right side it appears as though there were several shallow sulci which had fused by their adjacent surfaces, and over which the meninges pass. On both sides, in many places, this layer appears very wide, probably owing to disappearance or absence of second layer cells. The nerve-cells on the right side seem more numerous than on the left, and on the right side the Meynert's striæ are not well defined. As usual, one sees single cells or groups of degenerated, darkly stained cells, and others with a more natural aspect or with a large clear "bladder-like" nucleus. The Betz cells are few in number, contain an excess of yellow pigment, some (the minority) are small and darkly stained, but they all show the usual axonal character.

There is a somewhat marked proliferation of pericellular nuclei around the spindle-cells on the right side.

Subcortical nerve-cells very numerous.

*Vessels.*—The walls of the arteries are thickened, the veins enormously engorged. Intra-vascular thrombi, chiefly in the form of hyaline spheres and masses, present in large number, and, in some places, almost every capillary contains a plug. In sections treated for phosphorus this clot and also the degenerated nerve-cells stain dark green.

*Right parietal.*—Meninges as in ascending frontal region. Extravasation of erythrocytes. The surface of the zonal layer shows a patchy, sclerosed rim, and in places distinct buds of glia tissue ( $50$ — $150\mu$  deep) with numerous nuclei. In other parts there is no appearance of increase in the glia-cells.

Meynert's striæ are quite indistinguishable, and the first layer has a very extraordinary configuration. It apparently dips down in places into the cortex, so that its two edges join and fuse together. And it can be traced as a cell-free band pursuing a most serpentine course

throughout the entire depth of the cortex, and bordered thickly on either side by nerve-cells indistinguishable from the ordinary cells of the second layer. The remaining cells of the cortex are scanty and to a large extent shrunken and degenerated.

*Vessels.*—There is an enormous engorgement of the veins, and cortical hæmorrhages are present, but intra-vascular clotting is not marked.

*Cornua ammonis.*—Meninges as in preceding region. The nerve-cells of the pyramidal stratum show a fairly good appearance, and no decided diminution in numbers. The granules are diminished in number, and this layer is beset with large-bodied glia-cells.

The vessels contain a fair amount of intravascular clot. In sections specially stained for neuroglia by Beneke's methylene violet method



CASE 14.—Showing the appearance of the right parietal cortex under a low magnification. The dotted lines enclose the zonal layer which is continued in a circuitous course throughout the entire depth of the grey matter.

there is seen to be a marked proliferation of glia elements, and a sclerosed rim to the ventricular surface in the region of the dental nucleus. The glia cells vary in size from  $60\mu$  to  $24\mu$ . Their body assumes a pale rose tint, and their branches, which are very sharply defined, a dark red or purple.

*Medulla oblongata.*—The only features calling for remark were the degenerated condition of the nerve-cells of the olivary bodies and the increase of small glia-cells and fibres, here and in the marginal portions of the anterior half of the medulla.

*Cerebellum.*—In the section examined there is general atrophy of the foliæ, with fibrillar condition of the molecular layer, disappearance of Purkinje cells, and great diminution in the number of granules. The meninges are thickened, and there is a considerable extravasation of erythrocytes in them.



*Spinal cord.*—Meninges and extravasated erythrocytes as in the cerebrum. Many of the forehorn cells, especially in the lumbar region, show an axonal character; the cells contain a considerable amount of yellow pigment, which stains *black* with osmic acid. The central canal is patent in the cervical region, obliterated in the lumbar. In the former region a small neuroglial bud is seen projecting into the lumen. Numerous small punctate hæmorrhages into the forehorns. There was some atrophy of the left side of the cord, associated with old degeneration of the crossed pyramidal tract. No other tract degeneration noted.

*Remarks.*—I would draw attention to the fact that in the regions specially stained for glia elements, and which showed the proliferation of cells and fibres, a similar condition could be seen, but not quite so distinctly, by the ordinary methods.

CASE 15.—A. K—, female, a medium-grade imbecile, with dorsal curvature and torticollis. Able to do simple household work. Had single and serial attacks of *grand mal* nearly every day. Died, æt. 24.

Autopsy four and a half hours later. Encephalon 1114 grm. The cerebrum appeared natural. The upper surface of each lateral lobe of the cerebellum was sclerosed and atrophied.

There was atrophy of the right anterior horn in the upper dorsal region (only).

No very evident cause of death was discovered. There was some quiescent tubercular lesion of one lung. The liver and kidney were fixed in alcohol and treated for phosphorus. The former showed marked evidence of intravascular clotting, the latter none. Structurally both organs were natural.

Pieces from ascending frontals, upper lobes of cerebellum and spinal cord were fixed in alcohol and stained as usual.

*Ascending frontals.*—The zonal layer was bordered by a continuous thin (30  $\mu$ ) sclerosed rim, containing only glia fibres. In other parts of the layer the glia-cells were increased.

*Nerve-cells.*—The second layer was ill defined, owing probably to diminution in numbers of its elements. The striæ of Meynert were not well defined. The cells generally were either small and darkly stained with dense nucleus, or else pale and with clear or swollen nucleus.

The Betz cells were numerous; all showed the usual axonal characteristics, and the majority were large, pale, and rather heavily pigmented, with a clear and swollen nucleus. A few were rather darkly stained and shrunken.

There was a noticeable increase of pericellular and perivascular nuclei in all the layers, and erosion of the nerve-cells.

The vessels presented the usual appearance as to distension, but very little clot was seen, which was most marked as a green, granular material in those sections treated for phosphorus by Macallum's reagent.

*Cerebellum.*—The foliæ were atrophied and the Purkinje cells



diminished in number, but those present were generally large and pale, with scarcely any chromatoplasm and an eccentric, clear nucleus (axonal characters).

Bergmann's fibres were visible. The granules were few. The larger vessels in the white matter showed a considerable amount of granular clot.

In quite a localised region of the atrophied part—an area only a few mm. square—in the granular layer and one of the roof nuclei there were, as seen in unstained sections, numbers of highly refractive round bodies, single or in clusters, looking exactly like air-bubbles. When tested with hydrochloric acid these *partially* dissolve, but do not completely disappear, even if left in the acid for twenty-four hours. If sections which have been subjected to hydrochloric acid are stained with erythrosin and toluidin blue, these bodies stain very nearly black (Fig. 3), the smallest ( $1\ \mu$ ) up to the largest alike; but in sections not previously treated with the acid it is only the small ones which stain darkly, the larger masses colour a pale blue and exhibit concentric markings and sometimes radial fractures (Fig. 4). From these appearances I infer that the larger masses have undergone more or less calcareous change, which prevents them from staining till the lime has been removed by the hydrochloric acid. In sections treated with acid and then stained by Macallum's method the bodies all stain a *dark* green, showing that they contain phosphorus and indicating their nucleo-proteid nature.

This material lies alongside small blood-vessels and capillaries, forming sometimes for some distance an outer cast to a capillary. It is probably a transudation from the blood, and seems to represent a somewhat earlier stage of the same vitreous process that was seen in the cortex of Case No. 8.

*Spinal cord.*—Anterior horn-cells show a normal stichochrome appearance in the cervical region, but in the lumbar a fair number (7 or 8 in each horn) show axonal characters. No pigment. Nucleus large and clear. The central canal is patent in the upper, nearly obliterated, and with proliferation of its lining cells in the lower region.

There were no signs of tract degeneration, either recent or old.

CASE 16.—S. M.—, female, mother of eight children, became first insane (melancholy) when thirty-four. Only subject to occasional single epileptic fits for the last two years of her life. Between fits was a quiet, industrious woman. Died in *status epilepticus* æt. 51.

Autopsy twenty-eight hours after. Encephalon 1140 grammes. Basal vessels bulky and atheromatous. Marked atrophy of convolutions in both frontal and parietal lobes.

Some small old softenings in right thalamus, left lenticular nucleus and a recent small softening in left caudate nucleus. Ventricles dilated. Both cornua ammonis sclerosed, pons small and firm. The liver showed, microscopically, increase of interstitial tissue and fatty degeneration, with marked thickening (all coats) of the arteries. The kidneys also showed increase of interstitial tissue.

Pieces of the prefrontal, ascending frontal, and pons were fixed in sublimate and stained in the usual way.

*Prefrontal*.—Some fibroid thickening of the meninges in places and slight infiltration with large lymphocytes. Well-marked, foam-like epicerebral exudate. There is hyaline thickening of the arterial walls, and many vessels show very marked endarteritis (signet ring form). The zonal layer appears natural and shows no sclerosed rim.

*Nerve-cells*.—There appears to be *in patches here and there* a diminution in the number both of the second layer-cells and the pyramids. Many of the cells are shrunken and darkly stained, with homogeneous degeneration of the nucleus. No swollen nuclei observed. The cells are not rounded, but often stunted and with few branches. There is some proliferation of pericellular nuclei.

*Vessels*.—No marked engorgement, no structural alterations. Quite a large number of blood-plates and hyaline spherical thrombi.

Numerous subcortical nerve-cells.

*Ascending frontals*.—Meninges similar to above. Extravasation of erythrocytes. The zonal layer shows a sclerosed rim ( $45\mu$ ) and definite granulations which seem in places to have grown into the membranes.

The Meynert's striæ are well defined, and there is no appreciable diminution in the number of cells. Second layer fairly well defined.

Throughout the cortex are degenerated (darkly stained) cells and groups of cells. The Betz cells are numerous, mostly shrunken and heavily pigmented. They stain with toluidin blue, a uniform dull colour (no chromatoplasm), some pale, others dark. Nucleus generally clear. They are in the condition generally termed "pyrexial" (although it should be noted that this woman's temperature did not rise above  $100^{\circ}$  F.), or by Marinesco, coagulation necrosis.

*Vessels*.—Veins engorged, arteries tortuous and collapsed. No marked evidence of intra-vascular clot.

Subcortical nerve-cells not numerous.

*Medulla oblongata*.—Very marked endarteritis of meningeal arteries. Granulations on the floor of the fourth, remote from the central line.

No marked evidence of clotting. The cells of the olivary nucleus were pigmented and degenerated.

CASE 17.—M. P.—, female, a high-grade imbecile, active and well-nourished, subject to very frequent and strong fits since birth. Died in *status epilepticus*, æt. 25.

Autopsy thirty hours after. Encephalon 1192 grm. Sclerosis of left cornu ammonis, otherwise no abnormal appearances. A small recent hæmorrhagic infarct in apex of left lung, otherwise the thoracic and abdominal organs appeared natural.

Pieces from the ascending frontals and from the region of the calcarine fissure were fixed in sublimate and stained as usual.

*Ascending frontals*.—Beyond extravasation of erythrocytes and the presence of the epicerebral exudate there was nothing calling for notice in the meninges. A very thin sclerosed rim, and slight increase of glia-cells in the zonal layer of one side.

*Nerve-cells*.—Meynert's striæ were not well defined. The cells of the second layer appeared fairly normal, but those lying lower showed marked pathological change. They were shrunken, distorted with a

wide pericellular space, and the description to be given of the Betz cells applies to the smaller pyramids. Betz cells, distorted and degenerated, showed no chromatoplasm; with erythrosin and toluidin blue the cytoplasm stained a diffuse, blurred purple. There was excess of yellow pigment. The nucleus was small, dense, and peripheral, and stained uniformly red. In the final stage of degeneration nothing but a shapeless mass remained, which had a pale, hyaline centre and a dark rim. The nucleus was solid and shrunken up, scarcely larger than its contained nucleolus. There were one or two larger and better shaped cells which were pale, and showed Nissl granules at their edges; these possessed large, clear, lateral nuclei. Evidently the majority originally showed the axonal form, but this had been masked by subsequent pathological changes. No marked proliferation of perivascular nuclei.

*Vessels.*—Great engorgement of veins and capillaries, arteries collapsed and tortuous. Only a small amount of intra-vascular clot, in the form chiefly of hyaline spheres.

The cells of the cortex in the calcarine region were very similar but less markedly affected. No other changes calling for remark.

CASE 18.—E. E. P—, female. A low-grade imbecile, active and spiteful, unable to attend to herself. Subject to frequent and severe fits, in one of which she died, æt. 25, having been in good health and condition on the previous day.

Autopsy three and a quarter hours after death. Encephalon weighed 1022 grammes. The meninges were thick and opaque at the vertex, and over the prefrontal lobes there were deeply congested areas. Marked atrophy of the convolutions at the vertex and in prefrontal region. Both cornua ammonis were sclerosed.

Microscopically the liver showed some increase of interstitial tissue and slight fatty degeneration. The kidneys showed small cysts, but apart from these their tissues appeared healthy.

Pieces from the prefrontal and both ascending frontal and medulla oblongata were fixed in sublimate and stained as usual.

*Prefrontals* (from congested area noted above).—Extensive extravasation of erythrocytes. Veins enormously engorged and contain granular and hyaline clot. No thickening or infiltration.

There is a thin ( $20-30\ \mu$ ) sclerosed rim to the zonal layer in places, and a marked increase of small glia-cells and fibres. Embryonal nerve-cells present.

*Nerve-cells.*—The second layer is well defined and its cells have generally a large clear nucleus. The pyramidal cells are in fair number, and they also usually contain a swollen "bladder-like" nucleus. Only a very few darkly stained shrunken forms; little groups of these lie close to little groups of cells with the swollen nuclei. Some excess of pericellular nuclei about the spindle-cells.

*Vessels.*—Engorgement of veins and capillaries. The latter in places are crowded with emboli in the form of cylinders of hyaline material. Blood-plates numerous. A small capillary hæmorrhage noted.

*Ascending frontals.*—Meninges as above described. The zonal layer shows no sclerosed rim and a fewer number of glia elements.

The nerve-cells of the second and pyramidal layers are similar to

those in the prefrontal section. Especially noticeable are the swollen "bladder-like" nuclei. The cells in the outer part of the third layer are few in number.

Betz cells, large and in fair number. The majority show the axonal form and contain an excess of yellow pigment. There is a marked increase of the pericellular elements. Numerous subcortical nerve-cells.

*Vessels* similar to those in the prefrontal section. Numerous small cortical hæmorrhages seen. Some sections show many capillaries blocked up and even distended by long hyaline clots, others show very few or none.

*Medulla oblongata*.—Many small capillary hæmorrhages in the regions of the hypoglossal and vagi nuclei. The hypoglossal cells are rather small and stain darkly with toluidin blue, but the stichochrome arrangement of their chromatoplasm is still observable. The nerve-cells of the olivary nucleus are small, distorted, darkly stained, and pigmented.

CASE 19.—J. F—, male. A high-grade imbecile, subject to very frequent fits since four years old, sometimes as many as fifty-five a month (day and night).

*Character of fits*.—If standing, generally fell backwards and kicked up his legs, if sitting would fling his legs up and sometimes turn a somersault over the back of the chair. Troublesome and violent. Developed pulmonary tubercle and died æt. 22.

Autopsy twenty hours after death, head and spine only examined. Microgyri in parts of ascending frontal, ascending parietal, and occipital gyri. No atrophy of convolutions. Sclerosis of cornua ammonis, most marked on the right. Encephalon weighed 1238 grm.

Pieces from the prefrontal, ascending frontal, calcarine fissure, cornu ammonis, cerebellum and spinal cord were fixed in alcohol and stained as usual. The cord was put into Müller's fluid for further examination.

*Right prefrontal*.—In one place the meninges show a marked infiltration with lymphocytes, chiefly of the small variety. No engorgement of veins seen. A foam-like epicerebral exudate is present. The zonal layer appears normal.

*Nerve-cells*.—The majority are darkly stained and shrunken with a small, dark, solid nucleus with, in many cases, a clear areola between it and the cytoplasm, (these cells stain dark green with Macallum's test for phosphorus,) and lie in wide spaces. They have a stunted appearance with few branches, and are diminished in number.

*Vessels*.—No structural alterations to notice. Blood-plates numerous and hyaline clots also seen, in one case blocking up a small venule as it dips into the cortex from the membranes. Subcortical nerve-cells well marked.

*Ascending frontals*.—There is some fibroid thickening of the meninges and infiltration with lymphocytes. A thin, sclerosed rim to the zonal layer and a minute bud of glia elements. No marked increase of glia-cells in the rest of the layer. Embryonal nerve-cells noted.

*Nerve-cells*.—Meynert's striæ very well defined. The cells of the second layer are in fair number. The outer half of the pyramidal layer is scanty, and the individual forms are stunted and with few branches.



The majority are darkly stained and shrunken, and with a dense irregular nucleus. They lie in wide spaces.

The Betz cells are very numerous and show axonal characteristics. They stain uniformly, and their chromatoplasm is in dust-like particles. They show, superadded to their congenital characteristics, the so-called pyrexial or coagulation necrosis (Marinesco) change. The bulk are large and pale, with a swollen "bladder-like" nucleus (see Fig. 5), but intermixed with these are a good number of darkly-stained shrunken forms, with a small dense nucleus. They contain no pigment.

Vessels, as in prefrontal sections, containing a noticeable amount of intravascular thrombi and numerous blood-plates. Subcortical nerve-cells numerous.

*Right calcarine fissure cortex.*—Convolutions small, cells as in preceding regions. No increase of glia noticed. Vessels as just described.

*Cornua ammonis.*—As usual, the more pronounced rim of sclerosed tissue and the greater exuberance of glia-cells is on the *less* sclerosed and atrophied side. There is shrinking and diminution in the number of the cells of the nucleus fasciæ dentatæ, both granules and pyramids.

The vessels and their contents do not differ from those in the previously described regions.

*Right lateral lobe of cerebellum* (upper surface).—Fibroid thickening of the meninges over the surface. No infiltration. Enormous engorgement of veins, and in one place one of these had ruptured. No appearance of Bergmann's fibres.

*Purkinje cells.*—Fair number, and the majority are of good size and normal appearance, with round, clear, central nucleus. A few darkly-stained, shrunken forms occur in groups. One small atrophied folium observed.

Fibrin and other forms of coagulum found in abundance in the vessels.

*Spinal cord.*—Nothing special to notice in regard to the anterior cornual cells. Central canal obliterated. The only tract degeneration noted was a symmetrically-disposed oval patch divided by the posterior fissure, which was well marked in the upper cervical and lower dorsal regions, but not appreciable (in Weigert preparations) at the lumbar enlargement.

CASE 20.—H. P—, female. A low-grade imbecile. Fits very seldom, but very severe. Was in bed with general dropsy for some months prior to death. Died, æt. 24, of chronic Bright's disease.

Autopsy seventeen hours after death. Encephalon 1150 grammes. The brain was anæmic, but otherwise showed no pathological appearances. The kidneys were small, very pale and tough, and capsules thickened.

Microscopical examination verified the chronic Bright's condition. The liver showed no pathological changes microscopically.

Pieces from the prefrontals, ascending frontal, medulla oblongata, and cerebellum were fixed in alcohol and stained as usual.

*Prefrontals.*—Meninges natural, except for thickening of the muscular wall of the arteries. Zonal layer wide; no increase of glia.

*Nerve-cells.*—Those of the second and outer half of the third layer were few in number. The cytoplasm was scanty and ghost-like. The





FIG. 5.

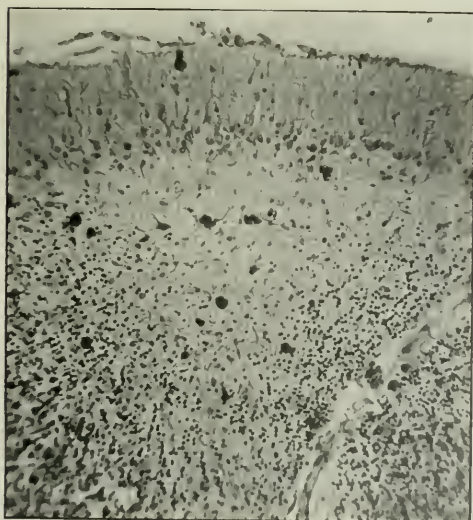


FIG. 6.

To illustrate Dr. JOHN TURNER's paper.



nucleus small and solid-looking, but quite round; it appeared to have shrunk from the cytoplasm, so that it was surrounded by a clear space. Here and there were groups of very shrunken, darkly stained cells.

*Vessels.*—The walls of the arteries were somewhat thickened. The veins were engorged and contained a marked amount of hyaline clot.

*Ascending frontal.*—No special changes in meninges or zonal layer.

There is a marked diminution in the number of nerve-cells, chiefly in the outer half of the cortex. The individual cells are in a similar condition to those in the prefrontal region. The Betz cells are numerous, and show the usual axonal characteristics, on which apparently have been superimposed later pathological changes. They are large, stain with polychrome blue an uniformly pale colour, with practically no chromatoplasm. In many, semicircular pieces appear to have been scooped out from their border, in the concavity of which a small, darkly stained nucleus lies free (phagocyte).

The nucleus, which is pushed up to one side, is sometimes clear and round, but more often very small and solid-looking. There is no pigment in these cells.

*Vessels.*—As in the prefrontal section. Blood-plates numerous.

*Medulla oblongata.*—This region was specially stained for glia elements by Beneke's methyl violet process, but showed no marked increase.

*Cerebellum.*—Meninges natural. No Bergmann's fibres visible in the molecular layer. The cells of Purkinje are probably diminished in number. The majority are small and darkly stained.

There is a marked amount of hyaline and granular clot and numerous blood-plates, which give the usual degrees of green colour when treated for phosphorus.

CASE 21.—M. A. S—, female. A married woman, typical epileptic disposition. No history as to when her fits originated; was subject to frequent and severe fits. She was resident in the asylum twelve years, and gradually became quite demented.

Died in *status epilepticus* at the age of forty-six; her temperature during the attack rose to 103.4° F., and fell to 99° F. just before death.

Autopsy three and a half hours after death. Well nourished. Encephalon 1129 grm.

Enormous (nearly half an inch) jelly-like, milky-white thickening of the meninges, in which the engorged veins stood out nearly black.

Corresponding atrophy of the convolutions (chiefly ascending frontal and parietal) beneath; very little atrophy or visible change in the membranes at the prefrontal and occipital poles; ventricles dilated. Both cornua atrophied, the left very firm.

Some stenosis of the mitral valve.

The kidneys were tough, with diminished cortex, and microscopical examination of these organs and the liver showed extensive fatty degeneration.

Pieces from the ascending frontal and the cerebellum were fixed in sublimate and stained as usual.

*Ascending frontal.*—The thickened meninges consisted of a loose, fibrous meshwork containing numerous large lymphocytes, chiefly lying

in the neighbourhood of the convolutions. The adventitial and muscular coats of the arteries were thickened. The zonal layer showed a marked proliferation of large glia-cells, and its surface was sclerosed and raised into granulations.

The nerve-cells generally were shrunken, distorted, and stained deeply, and the nucleus also. The Betz cells did not show the axonal characters, but they were so darkly stained and shrunken that it was difficult to form a very exact idea of their original configuration.

*Vessels.*—There was some thickening of the arteries and tortuosity, the usual venous engorgement and abundance of hyaline clot, which, in many instances, was found blocking up the capillaries. Golden pigment was deposited in some of the perivascular spaces. No marked increase of subcortical nerve-cells.

*Cerebellum.*—The meninges were thickened over the atrophic foliæ, and showed marked infiltration, with large lymphocytes and a few polynuclears. In other parts they appeared natural.

The tops of four of the foliæ presented small, wedge-shaped atrophic areas of degeneration, the apex of the wedge lying in the granular layer. Here, and here only, there was a marked proliferation of glia-cells and disappearance of the nervous elements. Compound granular corpuscles were scattered over the affected region, especially alongside the vessels (see Fig. 6). The cells of Purkinje were numerous, large, and pale, with, in many cases, well-marked Nissl granules around their periphery. The hyaloplasm of the cells had taken on the stain (polychrome). The nucleus was rather small and crumpled, denser than normal, and pushed up to one side (axonal form). A few scattered, darkly stained, shrunken forms were met with. In the section with the atrophic foliæ the cells showed more advanced changes; there was here practically a total disappearance of the chromtoplasm, and the cell was stained an uniform dull, dark blue, colour (acute cell change; coagulation necrosis).

Deposition of hyaline clot giving a positive reaction for phosphorus and blocking of the capillaries with the same was a marked feature, especially in the neighbourhood of the degenerated foliæ.

*Remarks.*—The small, well-demarcated, wedge-shaped areas of atrophic degeneration at the summit of some of the cerëbellar foliæ point strongly to their vascular origin, and the presence of the cylindrical coagula, occluding the smaller vessels, offers a plausible explanation as to the means whereby these areas would be deprived of their blood-supply, and thus reduced to the condition they were in.

CASE 22.—S. H—, female, a widow, probably imbecile. Had been subject to fits all her life, but during her residence in the asylum (over two years) was not known to have had any. She was demented and unable to attend to herself. Died æt. 53, of colitis.

Autopsy thirty-five hours after death. Fairly nourished. Encephalon weighed 1133 grm. and showed no naked-eye changes. On microscopical examination the kidneys appeared fairly healthy, but the liver

showed marked fatty degeneration. No clot was noted in the vessels of either viscus.

Pieces from the ascending frontals and the left cornu ammonis were fixed in alcohol and stained as usual. The spinal cord was placed in Müller's fluid for further examination.

*Ascending frontals.*—The zonal layer appeared natural. There was a marked deficiency of the nerve-cells in the second and the outer half of the third layers. The majority showed no appreciable pathological changes, but scattered about were the usual groups of degenerated cells.

The Betz cells were large and numerous, and showed the usual axonal characteristics. They were heavily pigmented. On the left side many were distorted, shrunken, and darkly stained.

*Vessels.*—The usual condition as to distension was present; although no massive clot was seen, most of the vessels contained clusters of dark green (phosphorus reaction) hyaline bodies, varying from 4 to 20  $\mu$  in diameter. A cortical hæmorrhage was noted.

*Left cornu ammonis.*—No appearance of gliosis. The nerve-cells appeared natural. Intra-vascular clot as in preceding sections and also in the form of granular massive deposits. Some fibrin.

*Spinal cord.*—Naked-eye inspection of transverse sections after hardening in Müller's fluid, showed a pale, thin, oval area lying in the columns of Goll over the middle half of the posterior fissure. The fissure divided this area into two fairly symmetrical halves. In Weigert preparations this area corresponded to a great paucity (but not complete absence) of myelin fibres. It was visible in sections from the cervical to the lumbar region, and occupied the same position close to the fissure at all levels. It was not appreciable in osmic acid preparations.

CASE 23.—H. P.—, male. A low-grade imbecile, subject to frequent and severe fits since 18; three or four every week, chiefly in the daytime. Died æt. 26, of lobar pneumonia.

Autopsy four hours after death. Poorly nourished. Encephalon 1235 gm.

Beyond the pneumonic condition of the right lung the viscera appeared healthy.

Pieces from the ascending frontals, the cornua ammonis, the cerebellum, and the spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Ascending frontals.*—Meninges natural. A slight increase of glia-cells in zonal layer, no sclerosed rim. The second layer is ill-defined with small dark cells (staining dark green when treated for phosphorus), and the small and medium-sized pyramidal cells are of the same character. The Betz cells are large and numerous with axonal characteristics. They generally contain a large clear nucleus. There is a marked increase of pericellular elements in the inner layers of the cortex.

*Vessels.*—A small cortical hæmorrhage present. The vessels present the usual characteristics as to distension. There is a moderate amount of intravascular clotting, generally in the form of granular material: sometimes this is broken up into patches, and the centre of the patches stains dark green with the phosphorus test, whilst the border stains pale



green. Possibly this represents a stage in the resolution of the clot. Some fibrin masses are also present.

*Cornu ammonis* shows the usual shrunken and degenerated nerve-cells. Intra-vascular clot more abundant than in the ascending frontal sections. Blood-plates numerous. A small cortical hæmorrhage. No increase of glia.

*Cerebellum*.—No special pathological features noted beyond the usual sparsity of the Purkinje cells and their shrunken, degenerated condition. Clot as in the preceding sections.

*Spinal cord*.—Some fibroid thickening of the meninges and rupture of vessels. The anterior cornual cells show a good stichochrome aspect, contain very little pigment, and their nucleus is clear and central, sometimes swollen. The central canal is patent.

The cord, after hardening in Müller's fluid, showed on transverse section a pale, oval patch in the middle of Burdach's column, more marked on the right side and only visible in the cervical region. There was also some pallor of the crossed pyramidal tracts. On microscopical examination after osmic staining, the oval patch, only visible in cervical section, showed not only old but also recent degeneration (Marchi reaction).

There was considerable old and recent degeneration in both crossed pyramidal tracts, *most* marked in the cervical region and *least* in the lumbar. In the direct cerebellar tract of (?) right side in both cervical and dorsal regions (chiefly the latter), there was recent degeneration shown by the usual Marchi reaction.

CASE 24.—T. E—, male. A high-grade imbecile, sufficiently intelligent to earn his living at a jute factory before his admission to the asylum. Subject to frequent and strong fits, before and after which he was for some time maniacal. Worked in the asylum at hair-picking, and died æt. 35 of pulmonary tubercle.

Autopsy seven hours after death. Fairly nourished. Encephalon weighed 1253 grm. Except for the tubercular condition of the right lung the other viscera were apparently healthy.

Pieces from the ascending frontals and the medulla oblongata were fixed in sublimate and stained as usual.

*Ascending frontals*.—Some slight fibroid thickening of the meninges and slight thickening of the muscular wall of the arteries.

There was a marked increase of glia-cells in the zonal layer and in places a thin sclerosed rim.

*Nerve-cells*.—The second layer was well marked, its cells being fairly normal. There did not appear to be any diminution in the number of the cells of the third layer. The prevailing type of cell-change in all the layers is that characterised by a swollen and "bladder-like" nucleus. The Betz cells are large and numerous, presenting the axonal type. A few are darkly stained with dense nucleus. Some slight excess of yellow pigment.

Considerable increase of nuclei in the pericellular spaces. Subcortical nerve-cells numerous.

*Vessels*.—Veins and capillaries engorged; these latter are surrounded by an increase of perivascular nuclei. There was a very marked

amount, especially in some areas, of hyaline clot, chiefly in the form of cylindrical emboli, blocking up the capillaries and smaller veins. Blood-plates numerous.

*Medulla oblongata*.—The nerve-cells of the hypoglossal nucleus are not axonal. They present a good stichochrome appearance, but some are very dense. The vessels, in respect to emboli, are similar to those of the ascending frontal region.

CASE 25.—R. J—, female. Probably weak-minded from birth; stated to have had “sensations” (*petit mal*) for ten years. Was only resident in the asylum a month, appeared quite demented, and was subject to frequent attacks, both *grand* and *petit mal*. Died, æt. 57, of granular kidneys.

Autopsy five and a half hours after death. Encephalon 1200 grm. There was considerable atrophy of the brain, chiefly in the parietal lobes. The lateral ventricles were dilated. No sclerosis of cornu ammonis. Some pneumonic patches in lower lobe of right lung. Kidneys small and granular.

Pieces from the ascending frontals, cornua ammonis, cerebellum, and spinal cord were fixed in alcohol and stained as usual; the cord was put into Müller's fluid for further examination.

*Ascending frontals*.—Meninges. The arteries were thickened (muscular and inner coats), and on one side there was some fibroid thickening of the meninges and infiltration with large lymphocytes. Some slight proliferation of glia-cells in the zonal layer.

*Nerve-cells*.—Second layer badly defined, and in places scarcely visible. The cells in it were in most cases very shrunken and darkly stained (dark green when treated for phosphorus), but here and there was a pale cell with swollen nucleus. The outer half of the third layer consisted chiefly also of shrunken, degenerated elements. The nerve-cells of the inner half were in a more natural condition. The Betz cells were numerous, and the majority showed the axonal condition. A small amount of pigment present. The nucleus clear and plump.

There was a marked pericellular infiltration in the inner layers, and also about the smaller vessels and capillaries in this region.

*Vessels* showed the usual appearances, with a moderate amount of intravascular clot (granular and hyaline bodies), and accumulations of blood-plates.

Only a few subcortical nerve-cells observed.

*Cornua ammonis*.—Small granulations on the ventricular surface. The nerve-cells appeared fairly healthy, and there did not appear to be any paucity in the number of granules or pyramids. Large glia-cells with large ( $10\ \mu$ ) clear nuclei were numerous in the nucleus fasciæ dentatæ, and could be seen lying among the granule cells.

*Vessels*.—As in the preceding sections. Ruptured vessels with extravasated erythrocytes seen on both sides.

*Cerebellum*.—Nothing special to note, except that the cells of Purkinje were in fair number, and in many instances showed axonal characteristics. Contents of the vessels as in the preceding regions.

*Spinal cord*.—In the lumbar region, which was the only one examined for cell detail, there was considerable fibroid thickening of the meninges,

and a copious foam-like exudate around the vessels. The central canal was patent. The anterior horn-cells contained excess of pigment; they presented a normal stichochrome appearance. In some cases the nucleolus was enlarged ( $10\ \mu$ ). A large number of round hyaline bodies ( $9$  to  $10\ \mu$ ) were present in the posterior horns and in lesser number in the anterior. They often showed a radial fracture, and in sections treated for phosphorus they stained a distinct green colour. Similar bodies were also observed in the cornu ammonis.

As regards tract degeneration, there was visible to the naked eye, after hardening in Müller's fluid, distinct pallor of Goll's columns in both cervical and lumbar regions. Osmic acid preparations showed that in this situation there was a deficiency of myeline fibres. No recent degeneration. There was also in the position of the crossed pyramidal tracts a pallor due to deficiency of myeline fibres.

CASE 26.—A. M—, male. A low-grade imbecile, has somewhat frequent and strong fits, chiefly during the day. They occur singly. Died *æt.* 14, and at the autopsy no obvious cause of death was found. He had had a strong fit four days previously, and since then his temperature had been subnormal.

Autopsy sixteen and a half hours after death. Body emaciated. Encephalon 1104 grm.

The meninges were somewhat opaque over the sulci and at the vertex, and at the top of the left ascending frontal there was a thick, opaque plaque. The left ventricle was slightly dilated and the left cornu ammonis atrophied and firm.

The thoracic and abdominal viscera appeared healthy, and the kidney and liver were both examined microscopically but showed no pathological appearances, and were negative as to intravascular thrombi.

Pieces from the ascending frontals, the cornu ammonis, the cerebellum, and the spinal cord were fixed in alcohol and stained as usual. The cord was hardened in Müller's fluid for further examination.

*Ascending frontals.*—Marked fibroid thickening of the meninges and in places very considerable infiltration with large lymphocytes. The zonal layer is wide and contains an increase of glia-cells but shows no sclerosed rim.

*Nerve-cells.*—The second layer is ill-defined and individual cells are shrunken and with dark angular nuclei. There is some diminution in the number of cells in the outer half of the third layer, and the great majority are shrunken and with darkly stained small nuclei. The Betz cells are large and numerous, and show the usual axonal character. They are free from pigment. In contradistinction to the dense shrunken nuclei of the smaller cells their nuclei are swollen and clear, and their lining membrane is in many cases invisible.

The vessels call for no remark. There is no evidence of intravascular clotting.

The subcortical nerve-cells are few and inconspicuous.

*Cornua ammonis.*—Beyond the presence of small cortical hæmorrhages in the right, there were no pathological features noted in these regions nor in the *cerebellum*, and in neither region was there any sign of intravascular thrombi.

*Spinal cord.*—The forehorn cells were free from pigment, and showed a well-marked stichochrome appearance with a large clear nucleus. In the lumbar region one or two axonal forms were noted. There was a small hæmorrhage in one cervical forehorn. The central canal was patent in the upper part, but blocked up by proliferating endothelial nuclei in the lower. After hardening in Müller's fluid and making transverse sections, a heterotopia was found occupying about three quarters of an inch in length of the uppermost dorsal region, and at this site there was a perceptible increase in the bulk of the cord. A small, thin, pale area was noted between Goll and Burdach's columns, best seen in the cervical and upper dorsal region and not visible in the lumbar. Microscopic examination of osmic acid preparations showed that this pallor was due to a number of round or loculated lacunæ. So that in this area there was a diminution in the number of myeline fibres, without, however, any appearance of interstitial overgrowth. No other evidence of tract degeneration.

*Remarks.*—I have met with six cases of heterotopia of the spinal cord, but this is the first that I have seen in the case of an epileptic (?). Of these six, two were general paralytics (one male, one female), one an imbecile girl æt. 5, one a girl suffering from dementia præcox, and one a melancholic man, who died of cerebral hæmorrhage. The sixth is the present case.

CASE 27.—B. D—, male. A low-grade imbecile, slow in his movements and pugnacious, subject to frequent fits. Died, æt. 31, of a low form of pneumonia. Temperature never above 101° F.

Autopsy twelve hours after death. Encephalon weighed 1193 gm. To the naked eye the brain appeared natural except that the left thalamus was slightly smaller than the right. The liver on microscopic examination showed commencing fatty degeneration and the presence of granular intravascular clot.

The kidney showed hyaline spherical clots in the arteries (phosphorus-containing).

Pieces from the ascending frontals, cerebellum, and spinal cord were fixed in alcohol and stained as usual. The cord was put into Müller's fluid for future examination.

*Ascending frontals.*—Meninges natural. There was an increase of glia-cells in the zonal layer but no sclerosed rim.

*Nerve-cells.*—The second layer ill-defined and in places barely distinguishable, owing to the small number of its elements. Meynert's striæ were not well marked. There was a noticeable paucity of nerve-cells in the outer half of the third layer. The individual elements in both the layers mentioned showed generally a natural appearance, with here and there a darkly-stained, shrunken form. The Betz cells were numerous and showed axonal characteristics. The majority of them stained darkly, so as often to obscure all internal detail; the nucleus was shrunken and dense. There was very little pigment present.

There was considerable proliferation of pericellular nuclei around the



spindle-cells and the nerve-cells of the inner half of the cortex, and also in the perivascular spaces around the capillaries and smaller vessels.

Subcortical nerve-cells present in fair number.

*Vessels* showed no marked engorgement. Intra-vascular thrombi in the form of small hyaline spheres, single or in clusters, and which stained bright green when treated for phosphorus, were present in many of the veins and capillaries.

*Cerebellum*.—The cells of Purkinje were in fair number, many of them exhibited axonal characters. There was the usual admixture of darkly-stained shrunken forms.

No Bergmann's fibres visible. Intravascular thrombi, especially in the form of long cylindrical hyaline clots blocking the capillaries, were a noticeable feature. In one place in the meninges there was a copious deposit of hyaline material (staining green when treated for phosphorus), chiefly in the form of spheres, lying *outside* a vessel, in the lumen of which quite similar bodies were seen.

*Spinal cord*.—After hardening in Müller's fluid, it showed some atrophy of right anterior horn for a limited region between second and fourth cervical segment. In Weigert and osmic acid preparations the only sign of tract degeneration was a little oval-shaped patch in each column of Goll in the lumbar region only, lying alongside the middle half of posterior fissure. Here there was a great paucity of myeline fibres and some interstitial overgrowth.

The forehorn-cells of the cervical region in Nissl preparations showed a fair stichochrome appearance, with slight pigment deposit. The nucleus was large and clear.

*Remarks*.—The presence of extravascular hyaline material having exactly the same appearance and reaction as to phosphorus as intravascular thrombi close to it, suggests strongly that in some way there has been a transudation of material from the blood which has subsequently clotted. This appearance should be compared with those described in Cases 8 and 15, where a substance which gave a positive reaction for phosphorus was found deposited in the matrix of the cortex cerebri and cortex cerebelli, and which had undergone partial calcification.

CASE 28.—J. A. N—, female. A high-grade imbecile. Neat, industrious, and fairly intelligent. Has fits nearly every day, sometimes single, and sometimes a series, and also attacks of *petit mal*. After succession of fits becomes maniacal and spiteful for a day or two. Died, æt. 25, in a fit.

Autopsy five hours after death. Body well nourished. Encephalon 1259 grm. Beyond slight atrophy at the summit of the central convolutions and sclerosis of the left cornu ammonis, the brain appeared normal, as also the thoracic and abdominal viscera. Both the liver and the kidney were examined microscopically; both were structurally natural, but in the engorged vessels of the liver there was an abundance



of granular clot. Pieces from the ascending frontals, the cornua ammonis, the cerebellum, and the cord were fixed in alcohol and stained as usual. The cord was put into Müller's fluid for further examination.

*Ascending frontals.*—There was hyaline thickening of the meningeal arteries.

The zonal layer presented a normal aspect.

*Nerve-cells.*—The second layer was ill-defined, containing few cells, and these generally shrunken and with dark angular nucleus. The cytoplasm of the pyramidal cells stained uniformly a pale lilac (with polychrome blue), and there was an absence of any visible chromoplasm. The branches of the cells owing to this uniform staining were well seen. The nuclei appeared solid and very dark, and generally angular (homogeneous degeneration of Sarbo).

There was a marked diminution in the number of the nerve-cells in the outer half of the third layer, but in spite of this Meynert's striæ were well defined. The Betz cells were numerous and large; they stained all over a pale lilac in which dust-like chromatoplasmic granules of a slightly darker colour were visible. The nucleus was *very small*, but not crumpled; it was ill-defined owing to its taking on the same colour and being of nearly the same density as the cytoplasm. The nucleolus was large and occupied nearly the whole area of the nucleus. There was no pigment in these cells. They did not show axonal changes.

*Vessels.*—No marked engorgement of the veins. Intravascular clotting, chiefly in the form of granular material, in large masses was seen in some of the veins of the cortex, and sticking to the lumen of some of the vessels were masses of a hyaline nature. In the preparations for phosphorus the granular form stained pale green, the hyaline dark green.

The subcortical nerve-cells were large and numerous.

*Cornua ammonis.*—The meninges showed slight fibroid thickening, with some slight infiltration with large lymphocytes. No granulation noted on the ventricular surface of the horns, and no increase of glia-cells.

The nerve-cells of the pyramidal stratum on both sides were shrunken and degenerated, but only on the left (the sclerosed) side were the granules affected; here they were much reduced in number and degenerated.

*Vessels.*—There was marked hyaline thickening of the veins, and in some cases their lumen was almost obliterated. Intravascular thrombi in the form of granular clots were present on both sides.

*Cerebellum.*—There was atrophy of small areas in one or two foliæ on both sides. No Bergmann's fibres seen. The cells of Purkinje were few in number and shrunken and degenerated. Hyaline thickening of the walls of vessels and intravascular clot as in the preceding sections.

*Spinal cord.*—Anterior cornual cells showed a good stichochrome appearance with clear nuclei. No excess of pigment. The central canal was obliterated by proliferation of its endothelial lining.

On naked-eye inspection of transverse sections of the cord, after hardening in Müller, there was a distinct pallor of the column of Goll, both in the lumbar and cervical regions, but neither Weigert preparations nor osmic showed any changes except more empty spaces in these

columns than elsewhere. There were slight, old, degenerative changes throughout the crossed pyramidal tracts.

*Remarks.*—The change in the nucleus of the nerve-cells (Sarbo's homogeneous degeneration) here described has given rise to much discussion as to its pathological significance. Many writers contend that it is merely a *post-mortem* change, and there is very little doubt that *post-mortem* changes do in some cases give rise to a condition of a like or closely similar nature. But, in support of the pathological importance of the change, it should be noted that in the present case the autopsy was held only five hours after death, and that the nuclei of the forehorn cells did not participate in the change. The condition of the cytoplasm corresponds to the acute cell change of Nissl (Marinesco's coagulation necrosis).

CASE 29.—E. M. G.—, female, subject to epileptic fits from the age of nine days up to four years. At first they were very frequent and strong, but gradually became less frequent and severe, and for the last six years of her life there is no record of her having had any. An idiot, able to walk with a little assistance. Took very little notice of things. Died æt. 10.

Autopsy twenty-five hours after death. The viscera appeared fairly healthy.

Marked sclerosis of right cornu ammonis, cortex congested in patches. Encephalon weighed 1124 grm.

Pieces from both ascending frontals and right cornu ammonis were fixed in sublimate and stained as usual.

*Ascending frontals.*—Some fibroid thickening of the meninges and considerable infiltration with round or oval cells (8–9  $\mu$ , a few 12  $\mu$ ). Their nucleus very dense (4–6  $\mu$ ) and at one side of the cell-body. Sometimes two nuclei. The larger cells (large lymphocytes) have a woolly cytoplasm, which often seems to be on the verge of breaking up. Several mast-cells seen. The vessels are not markedly engorged. Muscular coat slightly thickened.

The zonal layer shows no sclerosed rim nor increase of glia-cells; its innermost part is loculated. Nerve-cells observed in this region.

*Nerve-cells.*—No marked diminution in number. The great majority are small, dense, with dark, angular nuclei. The Betz cells contain no pigment; nearly half of them have a good stichochrome appearance with a clear central and normal nucleus. The others are darkly stained and with dense nucleus. On both sides several specimens showing an advanced stage of the axonal reaction are seen.

*Vessels.*—The arteries are thickened and somewhat tortuous, the veins engorged and fitting closely against the brain matrix. In both varieties one sees an abundance of spherical thrombi and also a homogeneous or granular material adhering to the inner side of the lumen.

*Right cornu ammonis.*—Meninges similar to those in the preceding region; its vessels contain an abundance of blood-plates, many of which appear to be disintegrated and broken up into smaller particles.

Small granulations noted on the ventricular surface, no marked sclerosed rim. Many *small* glia-cells with small dark nuclei.

The nerve-cells are similar to those in the preceding region. In the sclerosed part (the fascia dentata) the vessels generally, both arteries and veins, are collapsed and lie in wide spaces, across which stretches a foam-like exudate; some of these vessels appear mere threads with scarcely any lumen to be seen. In the non-sclerosed part the veins are somewhat engorged, and there is a small cortical hæmorrhage, in which is seen a ruptured vessel occupied by a collection of small spherical thrombi. These stain a dark green with Macallum's test for phosphorus.

There is all over the sections abundant evidence of intravascular clotting in all its usual forms, and, as is always the case, the homogeneous variety stains a deeper green, when treated for phosphorus, than the granular variety.

*Remarks.*—In spite of the fact that this child had no fits for five or six years before death abundant evidence of intravascular clotting was met with. This shows conclusively that in her case this clotting was not, as has been suggested, the result of fits. But it will be asked, Why in this case did not the thrombi produce convulsions? I would suggest that the explanation is, that the nerve-cells were not in a condition to respond to the stimulus of the cortical stasis, owing to their advanced state of degeneration.

CASE 30.—A. J. M.—, male. An idiot, blind and unable to stand or sit erect, admitted in good condition, but a year before death began to waste and became anæmic and feeble. Eleven days before death had a series of fits; when tested a little time after a fit the Babinski and Oppenheim phenomena were present in the left foot, the Babinski, but not the Oppenheim, in the right foot. He died æt. 11.

Autopsy twenty-four hours after death. No obvious cause of death found in the viscera. Both liver and kidney were examined microscopically and showed no pathological changes, except thickening of the muscularis and adventitia of the kidney vessels. The liver contained a quantity of finely granular clot in the blood-vessels (phosphorus-containing). The brain was tough; no special sclerosis of the cornua ammonis. The right thalamus was slightly smaller than the left. The encephalon weighed 995 grm. The cord was small and firm.

Pieces from the ascending frontals, the cornua ammonis, the cerebellum, and the spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Ascending frontals.*—The zonal layers showed an increase of small glia-cells, and in places on the surface a thin, sclerosed rim. In places the upper or outer half of the cortex, above the layer of Betz cells, is

almost denuded of nerve-cells, the few remaining being very darkly stained and shrunken.

The Betz cells are large, pale, and all show the axonal condition. No swollen nuclei observed. The subcortical nerve-cells are numerous and large.

*Vessels*.—Small hæmorrhages seen. In the vessels are abundance of blood-plates and finely granular clot and some hyaline spheres. The clot gives the usual green reaction with Macallum's reagent. In the inner half of the cortex there is some slight infiltration in the perivascular and pericellular spaces, chiefly small ( $4-5\mu$ ), dark nuclei.

In the *cornua ammonis* the only points to call attention to are the *patchy* degeneration of the cells of the stratum pyramidalum, and the usual small granulations on the ventricular surface.

The *cerebellum* showed no intravascular clot, no sclerosis, and no appearance of Bergmann's fibres. The Purkinje cells were axonal, very often with a small crenated or reniform nucleus. There was abundance of foam-like exudate around the vessels.

The *spinal cord* showed an entire absence of any tract degeneration, old or recent. There was a well-marked rim of sclerosis surrounding it.

The central canal was patent in the cervical region but obliterated in the dorsal and lumbar.

The forehorn cells contained well-marked Nissl bodies; they stained densely and were not pigmented.

*Remarks*.—The only point I wish to draw attention to is that in spite of the presence of the Babinski phenomena in both feet and the Oppenheim sign in one, there was no degeneration observed in either pyramidal tract.

CASE 31.—E. P.—, male, an idiot, unable to walk owing to contraction of legs. Has his fits chiefly at night. They occur singly and very occasionally. Died æt. 12.

Autopsy thirteen and a half hours after death. Body emaciated. No obvious cause of death discovered by naked-eye examination. The brain was firm and there was some sclerosis of both cornua ammonis and of the upper surface of the left lobe of the cerebellum. No one-sided atrophy of thalamus. Encephalon weighed 1067 gm.

Pieces from both ascending frontals, the cornu ammonis, the cerebellum, and the spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Ascending frontals*.—Slight fibroid thickening of the meninges; no cellular infiltration.

The zonal layer showed no increase of glia-cells and no sclerosed rim.

Meynert's striae well defined. The nerve-cells of the second layer were shrunken, darkly stained, and slightly diminished in number, their nucleus small, dark, and solid. No manifest sparseness of pyramidal cells; the cells of the outer layers were more shrunken and degenerated than those of the inner. The spindle-cells appeared least affected.

The Betz cells showed the usual axonal form. The nucleus appeared



natural. They contained no pigment. The subcortical nerve-cells were numerous and large.

*Vessels*.—The veins were well filled. There was no engorgement of arteries or capillaries or visible alteration in their walls. Numerous blood-plates and transitional forms between, on the one hand, blood-plates, and on the other spherical clots, shown best in preparations treated by Macallum's phenyl-hydrazin reagent. Granular and spherical thrombi and fibrin also met with. In the perivascular and pericellular spaces in the inner half of the cortex there was a moderate infiltration of cells with very scant cytoplasm and dark, round, or oval nuclei 5–6  $\mu$  in diameter.

*Cornu ammonis*.—The only points noted were batches of degenerated pyramidal cells (dark green with Macallum's test), numerous blood-plates in the vessels, and the presence in fair amount of phosphorus-containing granular clot and spherical thrombi, also a small cortical hæmorrhage.

*Cerebellum* (sclerosed region).—The meninges appeared natural. Bergmann's fibres were visible, the cells of Purkinje few and degenerated, the granules diminished in number.

*Spinal cord*.—Three levels examined, cervical and lumbar enlargement and mid-dorsal. No tract degeneration, old or recent. Central canal patent. Very little pigment (dark brown with osmic acid) in the forehorn-cells. Some homogeneous, brown-stained (with osmic acid) exudate around the vessels.

CASE 32.—E. S—, female. A high-grade imbecile, capable of useful household employment. Subject to frequent single fits (*grand mal*) with no warning. Also has frequent attacks of *petit mal*. Found dead in the airing-court lying on one side, probably succumbed to a fit, æt. 60.

Autopsy three hours after death. Fairly nourished. The heart was infiltrated with fat, the aorta atheromatous, and the coronary arteries rigid. The liver was tough, but on microscopical examination appeared fairly healthy. There was a large amount of granular (phosphorus-containing) clot in the vessels. The kidneys were cystic, and on microscopical examination showed very marked endarteritis but no interstitial changes, and no granular clot in the vessels. The brain showed no marked changes: it weighed 1142 grm.

Pieces from both ascending frontals, the cornu ammonis, the pons, cerebellum, and spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller for further examination.

*Ascending frontals*.—Except thickening of the muscularis no marked changes in the meninges. The zonal layer was narrow, showed some slight increase of glia nuclei, but no sclerosed rim. Embryonal nerve-cells present.

*Nerve-cells*.—Meynert's striæ fairly well defined; the cells of the second layer were scanty, shrunken, and with dense angular nuclei. The majority of the small and medium-sized pyramids were small, angular, darkly stained, and with a small, dense nucleus, but interspersed with these were larger, paler, and more healthy-looking specimens. There was some diminution in the number, chiefly in the outer region. The Betz cells were not axonal; they presented a fairly normal



stichochrome appearance with a large, clear nucleus and *very small* nucleolus. There was some excess of yellow pigment, but not out of proportion to age. The subcortical nerve-cells were small and numerous.

*Vessels.*—No marked structural changes noted. A small cortical hæmorrhage seen. Very little intra-vascular clot. Considerable proliferation of perivascular and pericellular cells. These showed a scanty cytoplasm, and clearly defined round or oval nucleus ( $4-6\ \mu$ ) with central nucleolus.

*Cornu ammonis.*—The main pathological features noted were prominent granulations on the ventricular surface, but no increase of glia elsewhere. Some patchy degeneration and diminution in number of the pyramidal cells of nucleus fasciæ dentatæ, but no marked changes in the cells of the stratum granulosum. Hyaline degeneration, with thickening and nearly total obliteration of the lumen of some of the cortical and medullary vessels, and in some of the dilated perivascular spaces and their immediate neighbourhood large numbers of round colloid bodies varying in size from 3 to  $12\ \mu$ . Endarteritis of the anterior choroidal artery. Numerous small cortical hæmorrhages.

The vessels contained a fair amount of both granular and hyaline thrombi, which gave the usual reaction for phosphorus when treated by Macallum's test.

*Cerebellum.*—Meninges fairly healthy, except for hyaline thickening of some of the vessels. No atrophied foliæ observed, no Bergmann's fibres. The cells of Purkinje were pale, fairly numerous, and many showed an axonal character. There was a large amount of granular clot in the vessels.

*Pons.*—Lateral granulations on the floor of the fourth ventricle. The cells of the hypoglossal nucleus and olivary body showed no marked changes. There was hyaline thickening of the vessels, and a small hæmorrhage in the region of the hypoglossal nucleus. Intra-vascular clot as in other regions.

*Spinal cord.*—Cervical enlargement. Meninges unaffected. Forehorn cells showed a natural stichochrome appearance with a large clear nucleus and some excess of yellow pigment. Central canal obliterated by proliferation of its lining endothelium. Large numbers of round colloid bodies in the white matter, chiefly of the posterior columns. Granular clot observed sticking to the sides of the lumen of the vessels. In the lumbar enlargement the appearances were similar. In the forehorns were, however, sharply defined groups of very darkly stained shrunken cells, lying in wide spaces, interspersed with others showing a normal appearance.

Weigert and osmic acid preparations showed no localised tract degeneration, but in the lumbar region only there was a peripheral zone with a paucity of myeline fibres and increase of connective-tissue elements.

CASE 33.—A. H—, male. An idiot, unable to walk. His fits began when he was quite a baby, and were frequent and severe until he was three years old; then they gradually ceased, and for the last twenty-two months of his life he had none at all. He developed lobar pneumonia with a temperature between  $104.8^{\circ}$  and  $101.2^{\circ}$  F., and died æt. 7.

Autopsy five and a half hours after death. Ill-nourished. Pneumonic patch in left upper lobe. Brain-convolutions broad and simple, no sclerosis of cornu ammonis. Encephalon weighed 1125 grm.

Pieces of both ascending frontals, both cornua ammonis, the cerebellum, and spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Ascending frontals*.—Meninges show some slight infiltration with lymphocytes. Fibroid thickening of some of the vessels and hæmorrhage.

The zonal layer appears unaffected, no increase of glia-cells.

*Nerve-cells*.—The second layer is ill-defined owing to paucity of cells, which in some cases have small, dark, in others clear nuclei. There is a great sparsity of cells generally; the pyramids in most cases contain a swollen, clear nucleus (ligation type); a few only of the cells are dark and shrunken. On the right side a few rudimentary Betz cells are present; on the left none at all are seen. A feature in these sections is the enormous number of well-developed subcortical nerve-cells, generally containing a swollen "bladder-like" nucleus.

*Vessels*.—The veins are dilated and in places have ruptured. The vessels contain a very large amount of clot in the form of granular masses and hyaline spheres, both of which give the green colour indicative of phosphorus with Macallum's test, the latter (the spheres) a darker green than the former.

*Cornua ammonis* show no increase of glia and no granulations on the ventricular surface. The cells of the stratum pyramidalum are similar to those above described, having generally a dilated nucleus. The cells of the stratum granulosum are not diminished in number and appear fairly healthy.

*Vessels*.—Veins engorged. The vessels show no structural alteration, but contain an abundance of granular clot which in some cases completely blocks up the lumen. There are also many spherical thrombi. In a section treated for phosphorus a dilated vein is seen full of pale green finely granular *débris*, among which are bright green blood-plates, and erythrocytes which are nearly colourless, and appear to consist of empty cases somewhat shrunken and broken up. The finely granular *débris* in this case has the appearance of resulting from the disintegration of erythrocytes.

*Spinal cord*.—In Nissl preparations the forehorn cells show a fairly good stichochrome appearance, without pigment, and their nucleus is frequently dense. Many of the cells appear shrunken. Small hæmorrhages noted in both the forehorns and the white matter. The central canal is patent in some sections, obliterated in others. The vessels contain an abundance of hyaline and granular clot.

There is old-standing degeneration of both crossed pyramidal tracts, most marked in the cervical region and not visible in the lumbar.

CASE 34.—E. P—, male. An idiot with unsteady gait and inco-ordinated movements. Subject to occasional strong fits, generally single. He died of pulmonary tubercle, æt. 16.

Autopsy eleven hours after death. The brain appeared natural. There was no sclerosis of the cornua ammonis. Encephalon 1192 grm.

Pieces from both ascending frontals, both cornua ammonis, the pons,

cerebellum, and spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Ascending frontals.*—Meninges, some fibroid thickening and in places pial proliferation, with small, darkly stained nuclei.

The zonal layer showed no sclerosed rim and appeared natural.

*Nerve-cells.*—Meynert's striæ not well marked. Second layer ill-defined, owing to the scanty number of cells. There was a marked paucity of nerve-cells in the third layer also, and indeed in some areas here they were almost absent. Groups of darkly stained, shrunken forms seen. The nuclei of the nerve-cells generally were dark, small, and angular. The Betz cells showed the usual imbecile type (axonal); they contained no pigment and their nucleus was small and of slightly increased density.

The subcortical nerve-cells were small but in fair number.

*Vessels.*—No special structural alterations noted. They contained numerous masses of finely granular clot and small hyaline spheres, giving the usual positive reaction for phosphorus. Small cortical hæmorrhage.

*Cornua ammonis.*—Some fibroid thickening of the meninges. Thickening of the muscularis of the arteries and endarteritis. No infiltration. Excess of polynuclears, which often fill the whole lumen of fairly large veins. This was observed in the veins of the cortex as well. No granulation nor increase of glia-cells.

*Nerve-cells.*—The cells of the stratum pyramidalum were diminished in number and degenerated. Those of the stratum granulosum appeared undiminished and natural.

Intravascular clot in large amount, chiefly the granular variety. Several small hæmorrhages noted.

*Cerebellum.*—Meninges unaffected. There was a small area of atrophy involving several foliæ. Except here, no Bergmann's fibres were visible.

The cells of Purkinje were degenerated and scanty. There was a large amount of clot (chiefly granular) in the vessels.

*Pons.*—Several capillary hæmorrhages, in the neighbourhood of the hypoglossal nuclei, and distended veins completely blocked with granular clot.

The hypoglossal cells showed scanty chromatoplasm and contained round, solid nuclei which stained uniformly with erythrosin (homogeneous degeneration of Sarbo).

There were no granulations on the surface of the fourth ventricle.

*Spinal cord.*—After hardening in Müller showed to the naked eye in cross sections marked pallor of Goll's columns in the cervical region. This pallor was less marked and extensive in the dorsal and scarcely visible in the lumbar region. Microscopically the degeneration, for the most part old-standing, but mixed with a slight amount of recent Marchi reaction, was limited to Goll's columns. In this degenerated area were many large lacunæ, and very slight increase of interstitial tissue.

The forehorn cells showed no marked changes, except that in the cervical region there were a few and in the lumbar many axonal forms.

The central canal was patent. Clot was present in the vessels and the meninges appeared to be unchanged.

CASE 35.—O. W. G—, female. An idiot, subject to fits since the age of three years. Had been operated on for them at the age of seven years (trephine mark, 2 in. in diameter, on the left side just above the ear). Her fits were frequent and severe (serial). Twice during her residence here was in *status epilepticus*, temperature rising to 105° F., and succumbed to the second of these attacks æt. 16.

Autopsy nine hours after death. Broncho-pneumonia was found to be the immediate cause of death. The kidneys (examined microscopically) were healthy.

*Brain.*—There was a cyst with some thickening of the walls in the pia-arachnoid under the trephine hole, over Broca's area. General atrophy, most marked on the left. Consistency normal in frontal areas, tough in occipital. Pons very firm. Cerebellum firm. Encephalon 1016 grm.

Pieces from both ascending frontal and both occipital regions were fixed in sublimate and stained as usual.

*Ascending frontals.*—Meninges, slight fibroid thickening and slight lymphocyte invasion. Abundant epicerebral foam-like exudate. Numerous blood-plates in the meningeal vessels. The zonal layer shows a moderate proliferation of glia-cells and in places a narrow, sclerosed rim.

*Nerve-cells.*—The second layer is fairly well defined. There are many degenerated cells and many with a swollen nucleus. The Betz cells vary, some being darkly-stained and shrunken, others with a large, clear nucleus. They contain an excess of pigment. Only a few show axonal characteristics.

Subcortical nerve-cells in fair number.

*Vessels.*—A black pigment is deposited in the perivascular sheath of some of the medullary vessels. Intravascular clot in all its forms present in fair amount. Some of the smaller vessels and capillaries are quite blocked up. Blood-plates numerous. The clot, when tested for phosphorus, gives the usual positive result.

*Occipital regions.*—Very slight evidence of glia-cell proliferation in the zonal layer; a narrow, sclerosed rim. The nerve-cells stain darkly and do not show a swollen nucleus. Intra-vascular clotting in large amount, especially on the right side, many capillaries entirely blocked with it. On the right side only, small cortical hæmorrhages met with.

CASE 36.—M. D—, female. A medium-grade imbecile. Subject to fits from infancy, which gradually became less frequent, and for some years prior to death ceased entirely. Infantile paralysis of right arm. Died æt. 47, of chronic Bright's disease.

Autopsy twenty-four hours after death. Atrophy of left hemisphere. The convolutions on this side were represented only by the surfaces of the gyri, as in a bogus book-case showing only the backs of the books. Scarcely any white matter. The right hemisphere contained a small, white, sclerosed patch in the prefrontal lobe. The whole cerebrum (especially the left side) was firm, but there was no special sclerosis of the cornua ammonis. The *left* lobe of the cerebellum was the smaller, and weighed 7 grm. less than the right. There was on its upper sur-



face a sclerosed patch. There was a difference of 150 grm. between the weight of the two cerebral lobes. Encephalon 917 grm.

Recent infarcts in both lungs. The liver (examined microscopically) showed merely congestion. There was a well-marked quantity of granular and hyaline clot and fibrin. Kidneys (examined microscopically) small and granular, with marked endarteritis.

Pieces from the prefrontal, ascending frontals, cerebellum, and spinal cord were fixed in alcohol and stained as usual. The cord was hardened in Müller for further examination.

*Prefrontal.*—Meninges, fibroid thickening. Marked diminution in the number of nerve-cells, and many were shrunken and degenerated. Blood-plates, small hyaline spheres and cylinders, the latter lying in capillaries, were present in considerable quantity. They gave the usual positive reaction when tested for phosphorus.

*Ascending frontals.*—Meninges, considerable fibroid thickening. The zonal layer appeared natural. Nerve-cells: Meynert's striæ not well marked; there was a great diminution in number of the cells of all the layers, chiefly in the left side (atrophied). The cells of the two sides showed marked differences—those on the left shrunken and darkly-stained, those on the right were larger and did not stain darkly, and their nucleus was larger and only slightly increased in density.

The Betz cells on the left were heavily pigmented, shrunken, and darkly stained; their nucleus was contracted and dense and frequently surrounded by a clear halo. The Betz cells on the right were much larger, not so heavily pigmented, and with a large and fairly clear nucleus. Several showed well-marked *peripheral* chromatolysis, only a small area surrounding the nucleus containing any chromatoplasm. On both sides the great majority showed axonal features. Vortex condition of cells present.

Very few subcortical nerve-cells seen.

*Vessels.*—Hyaline degeneration. In some cases the lumen was nearly obliterated. Very little clot noticed. The veins in many cases were enormously engorged.

*Cerebellum.*—Purkinje cells few and degenerated. An atrophied folium.

The intravascular clot was in fair amount and similar in form to that found in the prefrontal sections.

*Spinal cord.*—Cervical enlargement. Anterior horn-cells shrunken, but retaining a fair stichochrome appearance, nucleus increased in density. No excess of pigment. The central canal was patent, but showed some proliferation of cells around it. There was hyaline degeneration of the blood-vessels.

*Lumbar enlargement.*—The anterior horn-cells were large, contained no excess of pigment. They presented a good stichochrome appearance. The nucleus was large and generally of slightly increased density. Several axonal forms noted. The central canal was dilated.

In sections stained by Meynert's method and in osmic acid there was found to be very marked old degeneration of one crossed pyramidal tract and the opposite direct tract in the cervical region. This condition of degeneration was less marked in the dorsal region and least in the lumbar. No signs of any recent degeneration. In the osmic

acid preparation the anterior horn-cells, especially in the lumbar region, contained a quantity of black-stained (fatty) granules.

CASE 37.—W. J. W—, male. A gardener, no history as to how long subject to fits. Probably of average intelligence. Only under observation five months. Had strong fits every two or three days, and after each attack was maniacal. Died in a fit æt. 24.

Autopsy seven hours after death. The basal membranes were bound together by old adhesions. There was very slight atrophy of left thalamus; no sclerosis of cornua ammonis. The encephalon weighed 1567 gm. The cord was large and firm.

*Lungs*.—Old pleural adhesions on both sides. Kidneys (examined microscopically) healthy, some hyaline spherical clots seen in the vessels.

*Spleen* (examined microscopically) contained two large infarcts; it was much enlarged (215 gm.). Liver (microscopically examined) healthy.

Pieces from both ascending frontals, both sides of cerebellum, and spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Ascending frontals*.—A marked difference between the two sides. In both the meninges were unaffected and the subcortical nerve-cells fairly numerous. The vessels showed no structural changes and there was some increase both of perivascular and pericellular nuclei.

On the left side there was some increase in the glia-cells of the zonal layer but no surface rim of sclerosis. The cells were natural and not diminished in number. The Betz cells were not axonal and contained no pigment.

On the right side there was no marked increase of glia in the zonal layer. The nerve-cells of the second and outer part of the third were markedly few. The Betz cells were axonal and the nucleus of all forms often swollen and bladder-like.

In sections treated for phosphorus there were practically no degenerated (dark green) nerve-cells. Clumps of blood-plates and small spherical clots were seen, and there was a small amount of hyaline clot adhering to the sides of the lumina of some of the vessels.

*Cerebellum*.—Meninges natural, except for a small meningeal hæmorrhage and abundance of foam-like exudate. No signs of gliosis. The cells of Purkinje were fairly healthy. There was hyaline thickening of some of the veins, and the vessels contained clusters of blood-plates and (5 to 7  $\mu$ ) hyaline spherical clots in greater number than in the ascending frontal sections.

*Spinal cord*.—Cervical enlargement. The forehorn cells showed a fairly good stichochrome appearance, their nucleus was increased in density. The central canal was patent.

In the lumbar enlargement the forehorn-cells were similar. The central canal was blocked by proliferation of its endothelial lining cells. There was some hyaline thickening of the small vessels.

In osmic preparations the nerve-cells contained a central clump of nearly black pigment (? fatty). There was a copious foam-like exudate in the dilated perivascular spaces, which stained pale brown, and lying

in it were clusters of crumpled black-bordered spheres, probably representing the product of fatty changes in this exudate.

In neither osmic acid preparations nor Weigert's was any tract-degeneration seen.

CASE 38.—A. H—, female. A low-grade imbecile. Paralysed on left side, knees contracted, but could walk. Had frequent fits. Became very helpless and feeble, with swollen, cyanosed extremities, and died of pulmonary tubercle æt. 20.

Autopsy twenty-three hours after death. Brain small, microgyri in occipital and parietal regions, mostly on the right side. Sclerosis of both cornua ammonis. Encephalon weighed 988 grm. Tubercular deposits and caseous masses in both lungs. Tubercular ulcers of intestines. Liver (microscopically examined) showed advanced fatty degeneration. Blood-plates and granular clot in the bigger vessels in large amount. Kidneys (microscopically examined) fairly healthy, with exception of slight endarteritis. No clot. Spleen (microscopically examined) lardaceous. Pieces from both ascending frontals, the atrophied convolutions of right side, the cornua ammonis, and spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Ascending frontals.*—Meninges natural. Zonal layer natural. The only cells which appeared diminished in number were the Betz. The second layer cells and pyramids appeared healthy, but here and there were groups of darkly stained shrunken forms. The Betz cells did not show an axonal character. No marked excess of subcortical nerve-cells.

*Vessels.*—No structural alterations noticed. Dark green (with polychrome) pigment around the small vessels. Fibrin, granular clot, and spheres, giving a positive reaction for phosphorus, were in fair amount.

The only points calling for notice in the atrophied convolution were disappearance and shrinking of the nerve-cells. It is to be noticed, however—a common feature with atrophic convolutions—that there was a remarkable persistence of second layer cells, so that this layer was distinctly demarcated even in places where nearly all the deeper lying cells had perished. No increase of glia noted.

The *cornu ammonis* showed degeneration of nerve-cells in the nucleus fasciæ dentatæ, and was negative as regards clot.

*Spinal cord.*—Cervical enlargement. Anterior horn-cells degenerated, very little pigment. Central canal patent. Blood-plates, fibrin, and granular clot seen in the vessels.

Lumbar enlargement. Cells as above. Central canal patent, some proliferation of endothelial cells around it.

The only degeneration noted was in one crossed pyramidal tract, and this was only visible in the cervical region and was entirely of old standing.

CASE 39.—J. C—, male, labourer. His intelligence was up to the average of his class. Subject to occasional single and severe fits, after which he was liable to become maniacal or very vicious and dangerous. Died æt. 44 of epilepsy.

Autopsy eight hours after death. Well-nourished brain. The meninges were very injected over the prefrontal lobes (especially the left). No difference in size between the two halves of the thalamus, no sclerosis of cornua ammonis. The encephalon weighed 1374 gm. The liver (microscopically examined) showed marked fatty degeneration and some increase of interstitial tissue, negative as to clot. Kidneys (microscopically examined) showed marked increase of interstitial tissue and destruction of glomeruli. Spleen also showed on microscopical examination an increase of interstitial tissue. Other viscera appeared healthy.

Pieces from the prefrontals, ascending frontals, cerebellum, and spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Prefrontal.*—Meninges, extensive hæmorrhage, otherwise no marked structural changes. The zonal layer appeared unaffected. There was no noticeable diminution in number of the nerve-cells, and the majority appeared natural, with the exception of one or two small patches in which they were shrunken and darkly stained. The vessels showed no structural alteration and contained no clot. The veins were engorged and a small cortical hæmorrhage was seen.

*Ascending frontal.*—Meninges unaffected. The zonal layer showed no external rim of sclerosis, but there was a very considerable increase of glia nuclei; an embryonal cell noted. The nerve-cells did not appear diminished in number, and were well formed; they were all in an early stage of acute cell change, their cytoplasm staining uniformly a pale lilac colour (with polychrome), and their nucleus clear and natural.

Only a few Betz cells were seen; they also showed the acute change and were *not* axonal. Only an occasional solitary, degenerated, darkly-stained nerve-cell seen. Large numbers of subcortical nerve-cells.

*Vessels.*—No structural alterations and no clot observed. The veins were engorged and one ruptured. The arteries were collapsed and surrounded by wide spaces.

There was a considerable increase of perivascular and pericellular elements, mainly confined to the inner layers of the cortex and the medulla.

*Cerebellum.*—Meninges unaltered. No appearance of Bergmann's fibres. The cells of Purkinje were not diminished in number, and showed the same acute changes as the cells of the cerebrum. Practically no dark, shrunken forms. Vessels as in the cerebrum. No hæmorrhage seen.

*Spinal cord.*—Cervical enlargement. The anterior forehorn-cells contained an excess of yellow pigment and their nucleus was increased in density. They appeared to be in an early stage of the acute change and still retained some of their chromatoplasm. The central canal was obliterated by proliferation of its endothelial cells.

*Lumbar enlargement.*—Anterior horn-cells more shrunken and darkly stained; excess of pigment. Central canal as in cervical region.

There was no appearance of tract degeneration, either recent or old.

CASE 40.—E. M.—, female. A high-grade imbecile, subject to fits since the age of fifteen; generally has two or three daily (day and



night), and is often maniacal after them or spiteful and disagreeable. Died suddenly æt. 42.

Autopsy twenty-four hours after death.

*Brain.*—Sclerosis of both cornua ammonis, more marked on the left. Pons and cerebellum very firm. There was a small angioma in the upper part of the pons, on the left side, lying between the posterior corpora quadrigemina and the reticular substance. No other noticeable changes.

The encephalon weighed 1462 grm. With the exception of adherent capsules and a small infarct (?) in the kidney, the other organs appeared natural.

Microscopically the liver contained a quantity of intravascular and hyaline clot and the kidney showed some destruction of glandular epithelium and casts in the tubes.

Pieces from ascending frontals, cornu ammonis, pons, and spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Ascending frontals.*—Marked fibroid thickening of the meninges, no infiltration. In the zonal layer there was considerable increase of glia-cells in patches and a thin, sclerosed surface rim.

*Nerve-cells.*—In places there was a diminution in the number of the cells of the second layer, and nearly all were much shrunken and darkly stained. The cells of the third layer, especially in its outer half, were similar in character. The Betz cells were heavily pigmented; they showed the usual axonal characters; some were large and pale and others darkly stained and shrunken. No marked increase of subcortical nerve-cells.

*Vessels.*—Showed no structural changes; the veins were engorged and there was marked increase in the number of both perivascular and pericellular nuclei.

In preparations treated for phosphorus large numbers of degenerated (dark green) nerve-cells were seen, scattered thickly and fairly uniformly throughout the cortex. In the vessels were frequently seen clusters of blood-plates and, but not to a large extent, small hyaline (dark green) spheres singly or in groups of two or three.

*Cornu ammonis.*—Meninges slightly thickened, and in places there was slight infiltration with cells. Some thickening of the muscularis and slight endarteritis of the vessels. No increase of glia-cells noted, no granulations.

The pyramidal cells were extremely degenerated, but the cells of the stratum granulosum did not appear to be affected.

*Vessels.*—Small hæmorrhages into cortex, some hyaline thickening of the small veins. Blood-plates and small spherical clots as in the ascending frontal convolutions.

*Pons.*—The small angiomatous patch showed a cluster of closely set, enormously distended capillaries and venules. The walls of most of these were thickened and hyaline. Many of the distended vessels were completely filled with blood-plates. In some they lined the wall only. Fibrin threads and collections of polynuclears seen. The arterioles were tortuous and their walls thickened, but they were not dilated. No spider-cells seen in the vicinity. The neighbouring nerve-cells were

either large, pale, and contained a large "bladder-like" nucleus, or else shrunken, darkly stained, and heavily pigmented. They showed axonal characteristics.

*Spinal cord.*—Only the lumbar enlargement examined for cell changes, which were found to take the form in many instances of the axonal. The nuclei were homogeneous but not shrunken. There was a large amount of yellow pigment. The central canal was obliterated by proliferation of its lining-cells. Some of the vessels showed hyaline changes.

There was no tract degeneration, old or recent.

*Remarks.*—Some sections from the right and left prefrontal region, the other cornu ammonis, and the calcarine fissure region, stained by my methylene blue and peroxide of hydrogen method showed marked zonal gliosis, in the prefrontal and occipital sections, and patchy increase of glia-cells in the cornu ammonis.

CASE 41.—E. S.—, female. A medium-grade imbecile, married. Subject to frequent and severe fits; she died æt. 39.

Autopsy six hours after death. Her thoracic and abdominal viscera appeared natural; the only morbid appearance noted was an œdematous and very swollen condition of the right fold of the glottis.

The liver, kidney, and spleen were microscopically examined, but with the exception of small hæmorrhagic areas in the spleen they showed no marked changes.

Brain appeared natural, with the exception of sclerosis of both cornua ammonis (chiefly the right) and a sclerosed and atrophied patch in the centre of the upper surface of the cerebellum. The encephalon weighed 1055 grm.

Pieces from both ascending frontals, the right cornu ammonis, the cerebellum, and spinal cord were fixed in alcohol and stained as usual. The cord was placed in Müller's fluid for further examination.

*Ascending frontals.*—Meninges and zonal layer were unchanged.

*Nerve-cells.*—Meynert's striæ well marked. No diminution in the number of nerve-cells, and they showed no morbid changes, with the exception that the nucleus in many cases was swollen and bladder-like. The Betz cells were large and numerous, and all showed axonal characteristics, with clear, plump, sometimes swollen, nucleus and very little pigment.

The subcortical nerve-cells were small and not very numerous.

*Vessels.*—No structural changes noted; some engorgement of veins and varicose condition of those in the white matter, with deposits of dark blue-green (with polychrome) pigment around them.

In the sections treated for phosphorus no degenerated (dark green) nerve-cells were seen. The right side did not show any clot or blood-plates, whilst the left contained an abundance of both. Nearly all the capillaries and small vessels contained blood-plates (stained dark green), sometimes solitary, sometimes clustered thickly together and entirely filling up the lumen. These blood-plates measured  $1.5\mu$ . When

aggregated together so as to fill up entirely a vessel those at the periphery appear to have fused into a hyaline mass.

Larger spheres were met with, some scarcely bigger than a blood-plate, others 7 or 9  $\mu$  in diameter. The capillaries were often blocked up by long cylinders, evidently the result also of fused blood-plates.

*Right cornu ammonis* showed no increase of glia or granulations; the majority of the nerve-cells appeared natural. Some of the vessels were shrunken and looked like strings with no visible lumen, lying in wide lymph-spaces. Sections treated for phosphorus showed a large amount of clot and numerous blood-plates.

*Cerebellum*.—Meninges showed no marked changes. In the atrophied foliæ the molecular layer was thin but did not show Bergmann's fibres, the cells of Purkinje had disappeared, and only a few granules remained. Blood-plates and intra-vascular thrombi as in other regions.

*Spinal cord*.—Cervical enlargement. The anterior horn-cells were darkly stained and shrunken, but still retained their Nissl bodies; nucleus dense. Very little pigment. The central canal was patent, but there was some proliferation of its endothelial lining cells.

*Lumbar enlargement*.—Nerve-cells as in cervical region; more pigment. One or two axonal forms. Central canal obliterated by proliferation of endothelial cells.

In sections treated with osmic acid no recent tract degeneration was seen; the pigment in the nerve-cells stained brown. The central canal was dilated in the mid-dorsal region. In Weigert preparations of the cervical region there was old degeneration, or at least marked deficiency of myeline fibres in the columns of Goll. This was well seen also in the mid-dorsal region, but here at the surface end of Goll's columns was a small triangular or wedge-shaped area, extending on each side of the posterior fissure, and bounded posteriorly by the border of the columns, in which no degeneration was visible. In the lumbar region the degeneration was scarcely noticeable. No other tract degeneration.

*Remarks*.—Notice that the presence of thrombi was localised, for whilst they were plentiful in the vessels of the left ascending frontal, none were seen in the right ascending frontal. Sections from the prefrontal region and the neighbourhood of the calcarine fissure, stained by methylene blue and peroxide of hydrogen method, showed no increase of glia-cells in the zonal layer or elsewhere.

### PART III.

#### GENERAL REVIEW OF THE HISTOLOGICAL FINDINGS.

(A) BRAIN (1) *Meninges*.—Although to the naked eye they generally appear unaffected, except for congestion in

those dying in *status epilepticus*, on microscopical examination changes, slight but distinct, can often be detected. These are : a fibroid thickening, cellular infiltration, and extravasation of erythrocytes. These changes, as in most, if not all, the cerebral lesions associated with epilepsy, are local, so that whilst one region escapes, another suffers, or, indeed, one part of a section may show the changes and not the other.

In twenty-one out of thirty-six cases in which the meninges were examined fibroid thickening was noted, and in nineteen out of thirty-six there was some slight cellular infiltration in the meshes of the pia, the cells having generally the characters of large lymphocytes. Of course the *patchy* character of the affections makes it probable that a more extended examination would have revealed these changes in an even larger number, perhaps all. A certain amount of extravasation of red corpuscles from rupture of meningeal vessels is practically a constant feature. The thickening was only considerable in one of my cases, No. 21 ; here it reached a depth of 7 mm. in hardened specimens from the ascending frontal region. In this case it was not a dense fibroid thickening, but a loosely-meshed structure comprised of wavy fibrils and branched fibroblasts, and there was very little infiltration of lymphocytes or other free-lying cells in the meshes. Structural alterations, generally of the nature of thickening of the middle or inner coats of the arteries, or else hyaline degeneration, occur in much the same proportion as they do in the vessels in the brain, and will be more fully discussed later on.

(2) *Gliosis*.—Except in a very few cases (where Beneke's method was used) no *special* methods have been employed to show increase of glia. I believe that for pathological purposes they are not only not necessary, but often misleading. With ordinary methods the normal glia does not show in its entirety, but only the nuclei and a general reticulum which cannot be specially associated with any particular nucleus ; when, however, the tissue begins to proliferate and undergo pathological changes then the cells become clearly manifest, so that for the determination whether the glia is increased the information given by ordinary methods is at once precise and reliable. All the special methods that I am acquainted with require for their success very stringent conditions, not feasible for a general pathological review, and when successful they show such a wealth



of detail that in many cases it is difficult to determine whether one is in the presence of a normal or a pathologically proliferating glia.

Let me premise that practically in none of my cases has the increase of glia been considerable. I mean that it was not more than can usually be seen in any brains from cases of chronic insanity. In twenty-four cases there was an increase of glia, generally in the zonal layer (seventeen cases), alone or associated with increase elsewhere. The thickened surface rim of sclerosed tissue on which *Bleuler* lays such stress, even to the extent of regarding it and its glia connections as the essential factor in the pathology of epilepsy, is not greater than I have been accustomed to see in many brains from those dying of chronic insanity. Sometimes it forms definite little buds or granulations on the surface. The ventricular free surface of the cornu ammonis shows also commonly a sclerosed rim, and in this situation surface granulations are rarely absent; but this, again, is by no means peculiar to epilepsy.

In the seven cases (out of twenty-two examined) where there was an increase in the glia-cells in the substance of the cornu ammonis, this increase was inconsiderable; and generally in those cases with unilateral atrophy and sclerosis of the horns it was the *non*-atrophied horn alone which showed it.

The cerebellum was examined in twenty-seven cases, in six only of which Bergmann's fibres were visible.

Both as to amount and locality the increase of glia met with in my cases presented no feature characteristic of epilepsy, and appears to me to be quite inadequate as a factor in the etiology of the disease. Its increase can, I think, be more reasonably accounted for as the expression of a general perversion of the metabolism which tends to the over-production of simple (connective) tissues at the expense of the more complex and elaborate ones (nervous, glandular, etc.) and is to be associated with a general tendency to connective-tissue increase such as is found in other viscera, more especially the kidneys.

(3) *Sclerosis and atrophy*.—The brain of an epileptic is very often found to have small areas in the convolutions sclerosed and atrophied. The consistency of the affected parts may be only slightly firmer than the bulk of the convolutions, or they may reach an almost cartilaginous hardness, and the degree of atrophy varies likewise. The most common sites for these

changes are the cornu ammonis, the cerebellum, and the parietal or occipital lobes. Microscopical examination fails to show any increase of glia in the affected parts; the moderate amount of gliosis is not more than is often met with in regions where neither sclerosis nor atrophy is present.

It should be remarked that the brains of certain idiots, whether epileptic or not, do sometimes show patches of sclerosis associated with a genuine gliosis, in which giant spider cells occur, but this is a very unusual circumstance; it was not present in any of my forty-two cases, and does not appear to be in any sense a special characteristic of idiopathic epilepsy.

The cornua ammonis is the part most frequently selected for sclerosis.

In nineteen of this series (45 *per cent.*) it was present, and in the larger series (108) of cases which I referred to in my paper in the *British Medical Journal*, March 3rd, 1906, I found it to occur in the proportion of 48 *per cent.* The left, when only one side is affected, is nearly twice as often sclerosed as the right. According to my experience, and so far as I know of all who have made a special study of it, this lesion is very highly characteristic of epilepsy (Pfleger, Worcester, Bratz, Weber). The microscopical appearances are chiefly of a negative character: there is no increase of glia, the nerve-cells are few in number, and those present are generally degenerated, the vessels lie in wide lymph-spaces and are collapsed and atrophied, or may have undergone hyaline degeneration. Small hæmorrhages are generally found in the cortex.

Atrophy of limited regions of the cerebellar cortex are very often detected at the autopsy in epileptics, but more often, where only a single folium or a part of one is affected, it is only after microscopical inspection of sections that it is discovered, and considering the very small portion of the whole organ which is submitted to a microscopical examination, the probabilities are overwhelming that these small atrophies occur in a very much larger proportion than I give below.

The cerebellum was examined in twenty-seven cases, and localised atrophies found in twelve (44 *per cent.*). As in the case of the cornua ammonis, the microscopical appearances are largely of a negative nature, disappearance of the cells of Purkinje and the granules, general shrinking of the tissues, and very rarely any appearance of active glial overgrowth.

I maintain that the essential nature of these changes, whether in the cornua ammonis or cerebellum or elsewhere, is a starvation of the tissues, due to a diminution or deprivation of their blood-supply, and it is in connection with what I believe to be the cause of this alteration in the blood-supply that these atrophies and scleroses have such great significance in the pathology of epilepsy.

I submit that the varied site of the lesion, its preference in the cornua ammonis for the left side, its localised and sharply demarcated character, and the nature of the pathological changes observed microscopically can only be satisfactorily accounted for on the supposition that they have a vascular origin; and in the intravascular thrombi which I here show can be demonstrated in 90 *per cent.* of epileptics' brains I believe we have the means whereby the blood-stream to these parts is diminished or cut off.

By the deposition of hyaline or other forms of thrombi on the inner wall of the main artery supplying the parts its calibre may be so reduced that the vessel is unable to convey an adequate supply of blood to the parts. A reference to Case 12 will show that such a state of affairs is no mere hypothesis, but can sometimes be actually demonstrated. Very often I believe the obstruction occurs in the small arteries of the cortex, and that spherical thrombi becoming impacted therein lead to a gradual degeneration of all the tissues which these vessels normally supply, the final result being atrophy and hardening. The absence of necrosis and softening may, perhaps, be referred to the dilated lymph-spaces, which still provide a certain, although inadequate, supply of nourishment to the affected parts<sup>(3)</sup>.

B. Onuf has drawn attention to unilateral atrophy of the thalamus in epileptics. I have examined several of my cases on this point. In three I found a very slight atrophy—once on the right side and twice on the left.

(4) NERVE-CELLS (*a*) *Number*.—All observers have referred to a diminution in number, chiefly in the second and outer half of the third layers. I found this in twenty-nine of my forty-one cases; in many this sparseness was not evenly distributed, but here and there were small patches nearly devoid of cells, whilst in other places they were in good numbers. As was only to be expected, the twelve who showed no decrease were in most

cases persons of nearly average intellect (four cases) and high-grade imbeciles (three cases). I do not think, however, that the sparseness is altogether due to a congenital absence of cells, there are several points which militate against this supposition; the fact just mentioned of the patchy distribution of the change is one, and another is the fact that numbers of cells are found showing different grades of change up to total degeneration. These degenerated (dead) cells I presume are in course of disappearing entirely, and would, if time had permitted, have ultimately done so, leaving the bare patches just referred to. The greater liability of the smaller nerve-cells to succumb to adverse circumstances probably accounts for the decrease usually showing itself in these layers.

(b) *Persistence of subcortical nerve-cells.*—This condition is a stigma of defective nervous development, a sign of immaturity, and was first called attention to in the brains of epileptics by Roncoroni. These cells are present in new-born infants, but after a few years only a few remain. In the lower animals they persist throughout life. Although their axon but rarely, if ever, can be seen, their nervous nature is indicated by the characters of their nucleus, and the presence and arrangement of their chromatoplasm.

Twenty-seven out of thirty-six of my cases showed this condition, in nine epileptics of average intellect it was found in six and in nine high-grade imbeciles it was present in eight.

Another sign of immaturity is the persistence of nerve-cells in the zonal layer. In new-born infants quite a large number can generally be found, but at the adult stage, in persons whose nervous system is well developed, it is rare to find any by the ordinary methods of staining.

(c) *Degeneration.*—It is easy to recognise degenerated and probably dead nerve-cells by any ordinary method of staining; they appear shrunken, distorted, and with thin, spirally disposed branches, they stain all over darkly, and their nucleus is small, angular, dark, and homogeneous. In preparations treated by Macallum's method for the detection of phosphorus they show as dark green bodies, contrasting very markedly with the pale green undegenerated cells (*vide* Part I).

In all but five of my cases degeneration was detected, not as an uniform change but affecting single cells, or little groups of cells, chiefly in the second and third layers of the cortex.



(d) *Swelling of nucleus*.—I believe this to be an early stage in the downward grade towards degeneration. Cells characterised by an abnormally large clear nucleus were noted in eighteen cases. This change also affects single cells and little groups of cells, and groups of cells with swollen nuclei and groups of shrunken darkly-stained cells are often met with in the immediate neighbourhood of each other.

I attach considerable importance to these changes, for I believe that their localised occurrence can most reasonably be explained by the assumption that there has been some interference with the normal blood-supply of the affected cells; and I further believe that this interference is caused by the impaction of minute emboli in the capillaries supplying them. The swollen nucleus stage is particularly interesting because it has been found experimentally that by ligation of the cerebral vessels in the dog just such an alteration is produced in the nucleus of its cortical cells (Mott).

In many cases I have noticed a distinct enlargement of the nucleolus.

(e) *Betz cells*.—These cells occurring only in a very limited region of the cortex are by their size and the definite arrangement of their chromatoplasm peculiarly adapted for demonstrating alterations in cell-structure. I shall not dwell, however, on the changes with which we are familiar as the result of definite toxic or other morbid excitants, for although such changes are, of course, met with among epileptics, they do not in my opinion constitute any characteristic of the disease, but are merely an accidental accompaniment. The form of Betz cell to be considered is one which, as I shall show, appertains to defectively developed brains; it is an immature form. It is found normally in some of the lower animals and in young cells (Lugaro, van Bervliet), and, as I pointed out some years ago in this journal, is commonly found in imbeciles. As the form is identical in appearance with that which characterises the early stage of *reaction à distance*, or axonal reaction, there will be no necessity to more fully describe it.

I will here briefly give the results of an examination of a large number of brains from all forms of insanity in respect to this axonal character of the Betz cells. These results clearly show its importance as a stigma of defective development. In 303 cases of insanity in whom the ascending frontal region

of the brain was examined the Betz cells were of an axonal character in 106 (35 *per cent.*).

When these cases were classified there was found to be a great difference in the incidence of the change in different classes ; at one extreme came the congenitally defective (idiots and imbeciles) with 67 *per cent.*, at the other the general paralytics with only 19 *per cent.* Amongst cases in whom persistent melancholia was a feature the incidence was practically the same as with imbeciles (66 *per cent.*), whilst in all the remaining classes together it was 38 *per cent.* I do not wish to imply that an immature form of Betz cell is necessarily synonymous with defective intellect, merely that those with defective Betz cells will be more likely to possess other defects of nerve-structure which do immediately subserve intellectual functions. Certainly in the population of this asylum, and probably in most public asylums, the general paralytics as a class are far above the other patients intellectually, and it is, therefore, interesting to notice the comparatively small proportion of cases with axonal cells amongst them.

To return to the epileptics, in all but twelve of my forty cases (in one the ascending frontal region was not examined) the axonal form of Betz cell was met with (70 *per cent.*) and the proportion of cases amongst those of average intellect in whom this change occurred was very slightly below the general average—in six out of nine, or 66·6 *per cent.*

(f) Purkinje cells were apparently diminished in number, and groups of degenerating cells were very commonly met with. In only six cases (22 *per cent.*) did they show an axonal character.

From the preceding account of the changes in the nerve-cells of epileptics it will be observed that there are two distinct varieties found. The first is a change indicating defective development. This was what might have been anticipated considering the large proportion of idiots and imbeciles included in these cases, but it should be noticed that the cases in whom the intellect was nearly or quite of the average showed stigmata of degeneration in almost as large a proportion as those of very low intelligence. The defect shown does not seem necessarily to imply defect of those parts which immediately subserve intellectual function. The second is a degenerative change which at first manifests itself in an acute form by swelling of the nucleus, then by degeneration and death of the nerve-cells,

and finally by their total disappearance, leaving areas quite devoid of cells. This sequence I believe follows an obstruction to the blood-supply, caused by impaction of intra-vascular thrombi in the capillaries or small nutrient vessels of the parts affected.

(5) *Vessels*.—(a) Structural alteration was, as a rule, an inconspicuous feature. In sixteen cases thickening generally of the muscularis was noted, but in all except one or two this was slight; hyaline degeneration, accompanied by thickening, was present in four, in one of these to a marked extent in the veins of the cornu ammonis (Case 27), endarteritis in three.

(b) An increase of the perivascular (and pericellular) elements, although not to a marked extent, was generally present. By the method of staining which has been used in this investigation, these elements appear as free nuclei measuring  $4 - 6 \mu$ , and staining intensely, or they may show a minute trace of cytoplasm. They tend to adhere to the distal wall of the lymph-space, and not, as plasma-cells do, to the vascular. I believe that some light is shed on the true nature of these bodies, which has for long been a matter of dispute, by the observations I recorded in the *Review of Neurology and Psychiatry*, December, 1905, of the appearance they sometimes present when stained by my pseudo-vital method. Under some conditions not yet understood this stain occasionally picks out these elements, and it can be seen that they are really small cells with delicate branches, investing the nerve-cell or vessel by which they lie, and that they appear similar to the elements which Ford Robertson has described as mesoglia-cells.

(c) *Distension and hæmorrhage*.—The arteries of the cortex are usually collapsed and tortuous, lying in somewhat dilated lymph-spaces, the veins distended with blood and fitting closely their lymph-spaces. A varicose condition of the veins was noted in several cases. Hæmorrhages into the meninges or small capillary hæmorrhages of the cortex were practically a constant feature.

(d) *Morbid appearances within the vessels*.—The presence of large numbers of blood-plates and various forms of thrombi are, I believe, of prime importance in the pathology of epilepsy. The blood-plates usually form clusters of exceedingly small round granules, about  $1.5 \mu$  in diameter; they stain intensely





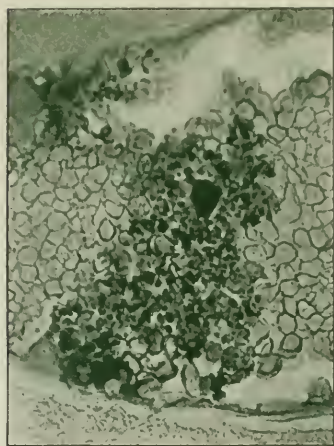


FIG. 7.

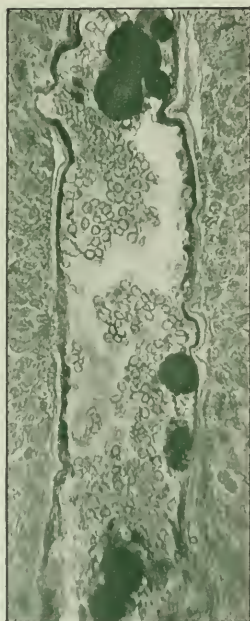


FIG. 8.

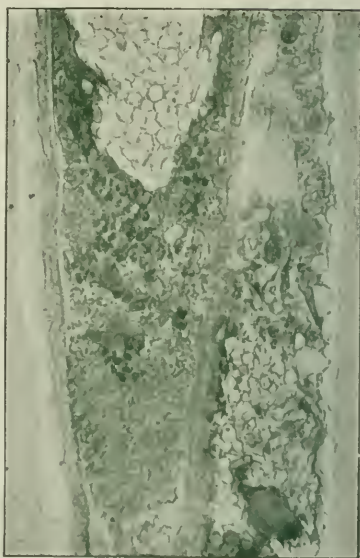


FIG. 9.

To illustrate Dr. JOHN TURNER's paper.

with polychrome blue, and, in fact, react to different stains exactly as blood-plates do in films. When treated with Macallum's method they assume a dark green, showing that they are rich in phosphorus and indicating their nucleo-proteid nature. Crowds of these bodies may fill up entirely a small vessel or capillary, or they may form isolated groups surrounded by erythrocytes. Somewhat larger spherical bodies can generally be seen in the groups apparently formed by coalescence of several blood-plates (Fig. 7) and specimens showing all grades in size from a blood-plate to the largest spherical thrombus can be readily obtained. The larger spherical thrombi often amalgamate into cylindrical masses, filling up entirely the lumen of a capillary or bigger vessel. Sometimes, again, these thrombi deposit themselves around the lumen of a vessel and partially obstruct it. The above-mentioned clots, which are of a hyaline or homogeneous character, react to stains and to Macallum's phosphorus test precisely as the blood-plates, and in all probably they are caused by a fusion of these little bodies (Fig. 8).

Another kind of clot takes the form of a finely granular material, which although it gives a positive reaction to phosphorus, stains a much paler green than the blood-plates. It is found often in large masses, either completely obstructing vessels or adhering to their inner wall. I am not certain whence this clot originates; possibly in some cases it is from the disintegration of erythrocytes which Paul Masoin has shown are extensively destroyed before fits, and in this respect it may be noted that it assumes the same intensity of green as the erythrocytes with the phenyl-hydrazin test; possibly in other cases it represents a stage in the resolution of the hyaline clot (Fig. 9).

With reference to the ultimate fate of the clot, probably small masses which have blocked a capillary may after a time be washed into the general blood-stream, or may lie so firmly impacted as to remain fixed, in which case the parts deprived of their blood-supply suffer permanent impairment as already pointed out. Probably in many cases the larger masses undergo a process of resolution and disappear (*vide* Case 23).

I have shown elsewhere (*Review of Neurology and Psychiatry*, February, 1905) that this phosphorus-containing clot is the result of a vital process and not a *post-mortem* phenomenon;

and the fact that blocked vessels are so often greatly distended on one side indicates that the coagulation is not merely a moribund phenomenon, but occurs at a time when the circulation is still active.

In all but four of my forty-one cases these thrombi were met with (90 *per cent.*), and as it has been shown (Cases 1 and 41) that these depositions may be restricted to very localised sites in the brain, it is quite possible that they were also present in the negative cases, though I failed to demonstrate them.

Before leaving the subject of thrombi there are a few remarks to be made on extra-vascular clot. In two cases (Nos. 8 and 15) vitreous and hyaline material were found deposited outside the vessels, which, although they presented different appearances to intra-vascular thrombi, were shown in one case (No. 15) to be of a nucleo-proteid nature. In a third case (No. 27) the material outside the vessel in the lymph-space reacted both to ordinary stains and to the phenyl-hydrazin test in a similar way, and was unquestionably of the same nature as the clot quite close to it inside the vessel. It would seem as if under certain conditions there may be a transudation from the blood-vessels of a phosphorised material which subsequently clots and undergoes calcareous changes.

(B) *Spinal cord* was examined in twenty-five of the cases.

The character of the lesions found was similar to those in the brain, but the changes in the cells and the amount of clot were less marked.

The cells of the anterior horns appeared natural in ten, their condition was not mentioned in three, and in twelve they were affected. The changes noted were as follows: In seven, shrinking and staining of the ground-substance, so that the Nissl bodies, although present, were obscured. The nucleus was increased in density, and more or less darkly stained also. In four cases only an axonal character of some of the cells was noted, and in three of these it was most marked in the lumbar sections. In one case the cells at all three levels appeared extensively degenerated. Occasionally where sections stained by polychrome blue for Nissl characters showed no pigment in the cells, the sections from the same case stained by osmic acid showed a clump of very nearly black pigment situated around the nucleus, which in all probability represented a fatty pigment. This must be differentiated from the usual yellow

pigment, which is generally situated at one end of the cell, and stains brown with osmic. This fatty pigment was specially noted in Cases 12, 14, 36, and 37.

Punctate hæmorrhages in the grey and white matter were noted in two cases (26, 33), atrophy of one forehorn in two cases (2, 27), heterotopia spinalis in one (26).

An interesting feature was the great frequency with which degeneration or (? congenital) deficiency of medullated fibres was met with in the posterior columns. In twenty-four cases examined in this respect it was found in ten (43 *per cent.*), and it was not only in the idiots and low-grade imbeciles, but among high-grade imbeciles and persons of fairly normal intelligence and free from bodily deformity (Cases 13, 22, 25).

It was the columns of Goll which were affected as a rule, and in only two cases (10 and 23) were recently degenerated (Marchi) fibres seen. Sometimes the whole columns from the lumbar to the cervical regions were affected; in other cases (19, 22, 27) the deficiency of myelinated fibres lay alongside the posterior fissure only, as a thin strip tending to bulge out in the middle and here occupying about the site of the oval tract of Flechsig (probably a descending endogenous tract).

When the cord, after being hardened in Müller's fluid, was cut transversely a pale area limited to Goll's columns could often be detected by the naked eye, and sometimes when sections from these cases came to be stained by osmic acid or by Weigert's method, no changes whatever could be detected, and in other cases, although there did not appear to be any increase of interstitial tissue, large empty spaces or lacunæ were observed, indicating, I believe, a congenital absence of fibres. If the changes met with in the posterior columns represented a breaking down of previously existing medullated fibres, the Marchi reaction would probably have been met with more often.

Is there any connection between the changes observed in the posterior columns of the spinal cord, a path by which afferent impulses are conveyed to the brain, and the condition of the Betz cells? It has been shown that after section of the posterior roots certain cells in the anterior horns are found in an axonal condition, and W. B. Warrington has suggested that they acquire this condition owing to a deprivation of the afferent



impulses which normally impinge upon them. One is tempted to assume that the reason, at any rate in some cases, why the Betz cells remain in an immature state in imbeciles may be because they do not receive an adequate supply of afferent impulses.

Degeneration of the pyramidal tracts was only met with in seven cases, and in three of these the Marchi reaction indicating recently degenerated fibres occurred. This lesion represents in all probability changes secondary to degeneration of the nerve-cells of the brain, especially the Betz cells.

## PART IV.

### CONCLUSION.

I will now briefly state the evidence showing the efficiency of stasis or cerebral anæmia as an excitor of convulsions.

(1) *Ligature of cerebral arteries in animals*.—Astley Cooper tied both carotids in a rabbit and compressed both the vertebral arteries, and spasm immediately resulted. In 1857 Kussmaul and Tenner showed that if the left subclavian and innominate arteries in rabbits be *suddenly* tied, general convulsions began in from three to forty-five seconds after.

There is no essential difference in the symptoms whether the arterial supply is cut off or the venous output is blocked up. Hermann and Esher ligatured the superior vena cava and azygos veins, the veins of the spinal cord and the vertebral canal, and obtained a typical spasm, occurring, however, after a more prolonged interval. Ferrari injected wax into the venous sinuses, and when every sinus was blocked an epileptic fit occurred.

Leonard Hill states that he has repeated Kussmaul and Tenner's experiments and finds that *nearly all* the rabbits die exactly in the manner described by these authors, and in cats about 40 *per cent.* die in exactly the same way.

(2) *Compression of carotids in man*.—Kussmaul and Tenner compressed both carotids in six men. In two only—and *both these, they state, were of weak intellect*—general spasms resulted and all the phenomena of a slight epileptic fit.

Schiff by compression of his own carotid produced spasms

on the opposite side of his body, preceded by a sense of numbness and formication.

L. Hill twice produced clonic spasm in himself by compression of one carotid artery, and he states that "sudden occlusion of one carotid can in some men produce a march of epileptic spasm preceded by an aura."

(3) *Intravenous injection of oily substances*.—For many years it has been known that intravenous injection of absinthe produces epileptiform seizures.

L. Pierce Clark states that Joffroy was able to produce convulsions in rabbits by the injection of furfural, but of ninety-seven rabbits so injected only sixty-nine developed convulsions.

I have seen epileptiform convulsions produced in a rabbit two days after an intravenous injection of clove-oil.

These experiments show that convulsions simulating epileptic *can* be produced by sudden stasis of the cerebral circulation, but they also indicate the necessity of some other factor beyond stasis, otherwise all and not only two of Kussmaul and Tenner's cases of carotid compression, and all, not only 71 *per cent.*, of Joffroy's rabbits, should have been convulsed. This other factor is, I believe, a suitable condition of nerve-cell and in all probability one of highly unstable equilibrium, such as we should expect to find in an immature form.

I claim to have shown that among my cases 70 *per cent.* showed defective structure, and 90 *per cent.* showed in the form of thrombi a blood state capable of acting as an excitor of convulsions. Granting for the moment that my supposition is correct, then a number of hitherto isolated and apparently unrelated phenomena are brought into line and are capable of being grouped under one cause. Impaction of thrombi in capillaries would account for the patchy degeneration of the nerve-cells. Impaction of thrombi in small vessels, or obstruction of large vessels by the same means would account for the isolated areas of sclerosis and atrophy, and I believe that venous obstruction might result in the formation of aneurioms, and clinically that the condition of the blood which results in this tendency to rapid clotting (not a massive clotting) would account for the great facility with which wounds in epileptics heal.

The varied phenomena which sometimes replace the convulsive-seizure, attacks of *petit mal* and what are termed psychic equivalents of a fit offer no serious objection to my supposition

In attempting to account for these, through the agency of intra-vascular thrombi, we must bear in mind several conditions having reciprocal relations to each other. First, the locality in which a clot is lodged—whether the site happens to correspond to a silent or explosive area of the cortex. If in the first region it is conceivable that the resulting phenomena will partake of the nature of an attack of *petit mal* or represent a psychic equivalent. Second, the strength of the stimulus, and its rapidity of application, for it is not to be supposed that a minute thrombus affecting only a very limited capillary cortical area will produce, other things being equal, such marked effects as a larger thrombus cutting off the blood-supply from a larger area of cortex ; and coagula deposited so as only to obstruct a vessel will produce less marked effects than those which by entirely blocking vessels, completely and suddenly cut off the blood-supply. Third, and probably most important of all, the degree of initial defect of cerebral structure must be reckoned with, according to which the equilibrium of the nerve-cells will vary in such a way that some will be more liable than others to respond explosively to the stimulus. It is quite possible also in connection with this factor that at certain times in individual cases the nerve-cells will be in a more irritable condition than at others, so that while at one time the stasis causes only a single fit, at another it may cause a series or even the *status epilepticus*.

Except in cases complicated by general inflammatory diseases or general paralysis, it is my experience that thrombi of the nature I have described in epileptics are not commonly met with in other forms of insanity. They do occur sometimes in large amount, especially in imbeciles not known to be subject to epilepsy.

With reference to the unfavourable aspect which this fact may be supposed to bear against my thesis, the question arises if, and to what extent, every lunatic is a potential epileptic. In my opinion a very large number, more especially of those with congenital defect, come under this category in so much that they contain within themselves certain but not all the factors required for the production of epilepsy ; sometimes they may lack the necessary condition of the nervous system, sometimes the necessary qualities of the blood.

My experience, probably shared by all who have much

acquaintance with the congenitally defective, is that one of this class not previously known to have had fits may at any time develop them; some may reach middle life before they do so, or some during the whole course of their lives may only have one fit or a single batch of fits.

It is also quite a common occurrence for the aged insane to develop epilepsy. These cases are interesting in so much as the mechanism of their convulsive attacks, I believe, resolves itself into two factors of the same nature as in idiopathic epilepsy; these are (1) an unstable condition of nerve-cells, senile dissolution of the nervous system, and (2) a condition of stasis or cerebral anæmia, resulting from arterial disease. In all such cases coming to an autopsy—and I have met with several—endarteritis obliterans has been found.

### ADDENDUM.

#### THE COAGULABILITY OF THE BLOOD IN EPILEPTICS.

The method employed was that introduced by Sir A. E. Wright and Dr. Paramore, and fully described by them in the *Lancet*, October 14th, 1905.

The calibrated capillary tube with an attached indiarubber teat was so arranged by means of a mercury piston that it would suck up a definite quantity of the blood which occupied a definite length of the tube. The blood was taken from a prick on the finger. The tube was then placed in water at blood heat ( $37^{\circ}$  C.) and tested at short intervals to find when fibrin first appeared. This was done by taking the tube out of the water and gently squeezing the teat, and allowing a portion of the blood to come upon blotting-paper. So soon as fibrin formed fluid blood no longer came away, but a long, continuous thread of fibrin. The authors speak of shreds of fibrin forming before a continuous thread; but I was not able to detect these, and I took as the coagulation point that time required for the formation of a definite fibrin thread, such as, on gentle pressure of the teat, could be seen stretching from the blotting-paper to the end of the capillary tube, when the latter was withdrawn a short distance from the blotting-paper.

On account of the diversity in the time of coagulation of different samples from the same subject taken at one sitting, I



took in all cases at least three and sometimes five samples and selected the one which clotted in the shortest time.

As Buckmaster observes, different observers using different methods have arrived at very conflicting results, and on this account it is difficult, if not impossible, to state the exact coagulation-time of healthy blood. Again, coagulation is influenced by a variety of conditions, many of which are imperfectly understood; thus the admixture of lymph, muscle-juice, or blister fluid (Delezenne, Wright) seems to accelerate coagulation, and Arthus has shown the influence which is excited by a wound on the rate of coagulation, and the short coagulation-time of a mixture of blood and lymph from a squeezed superficial puncture, contrasted with the much longer time when the blood issues freely from a deeper puncture. In the case of successive bleedings the blood has been noted to clot more rapidly.

The above remarks, extracted from Buckmaster's book on *The Morphology of Normal and Pathological Blood*, will serve to give some idea of the difficulties in the way of a comparison between the coagulation-rate in epileptics and non-epileptics. I soon found that no *absolute* statements could be made regarding the coagulation-time of the blood in epileptics or other cases of insanity, for there is sometimes a difference of over sixty seconds between different samples of blood taken at one sitting from the same case, and in the great majority of cases there is a difference varying between fifteen and thirty seconds.

There is another point to be noticed, which is, that the coagulation of the blood, as determined by the method used, depends upon the formation of fibrin. Now, this is the least characteristic form of thrombosis found in epilepsy. I draw attention to this because I at first thought that the rapidity with which wounds heal in epileptics might be accounted for by decrease in the time of coagulation of their blood, which would seal the injury and prevent the ingress of micro-organisms; but although I found some decrease in these cases during fits, it was not sufficient to support the idea as first formulated. Some observations made by Dekhuyzen, however, indicate that one of the functions of the blood-plates is to stick together and close wounded vessels, a phenomenon entirely different from a massive coagulation of the blood, and in the

light of these observations it seems to me quite probable that the epileptic's facility for healing depends on rapid closure of wounds by local coagula, although Wright and Paramore's method does not enable one to show this.

It might seem, in face of the various drawbacks mentioned, that an investigation into the coagulability of the blood of epileptics would not be of much value; still, I am of opinion that the following observations made under similar conditions, so far as possible, and at the same time of day, are of interest, as they show that in *most* cases there was, at or about the time of fits, a distinct acceleration of coagulation, and this occurred too often, I think, to have been a mere coincidence.

Between eleven and noon the blood from twenty-eight female epileptics was examined on 135 occasions in the months of January to April of last year.

The mean coagulation-time in these was 120 seconds; under similar conditions the mean coagulation-time in thirteen cases of insanity of various forms and about the same ages as the epileptics examined on thirty-eight occasions was 136 seconds.

Only twenty-three of the cases had fits whilst under observation, and in eighteen of these (78 *per cent.*) the coagulation-time was shortened at or about the time of fits. Sometimes a single fit was associated with an appreciable shortening of the coagulation-time, sometimes it was not.

The following is a synopsis of the eighteen positive cases. The coagulation-time in every case is given in seconds:

*Case 1.*—Shortly after a batch of fits her coagulation-time was 60; twenty-four hours later it had risen to 90; no further fits in between.

*Case 2.*—No fits for some days; coagulation-time was 120. Between January 30th and February 4th, during which period she had four fits, it was respectively 60 and 100.

On February 19th, when she had been free from fits for four days, it was 165. On February 23rd, forty-eight hours after two fits, it was 120.

*Case 3.*—On January 31st, whilst having fits, her coagulation-time was 75. On February 19th, when she had been free from fits for three days (nor did she have any for three days subsequently), it had risen to 150.

*Case 4.*—Only subject to single fits, and had not had any for several months when her blood was examined on February 1st, the coagulation-time being 150. On February 9th, a few hours after a fit, it was 60.

*Case 5.*—On July 1st, whilst having a number of fits, her coagulation-time was 60. Then, again, during a period from the 16th to the 26th, whilst she had four fits, it ranged between 105 and 115. On March 3rd, when she had not had any fits for two days previously and did not for two days subsequently, it rose to 180.

*Case 6.*—On February 3rd, just two hours after a strong fit, her coagulation-time was 75. On February 18th it was 105. She had had several fits the day before and one this day. On the 21st it rose to 135; she had had no fit this day, nor for two days previously, and did not have any for several days after.

*Case 7.*—The appended chart gives in graphic form the record of her fits and coagulation-time:

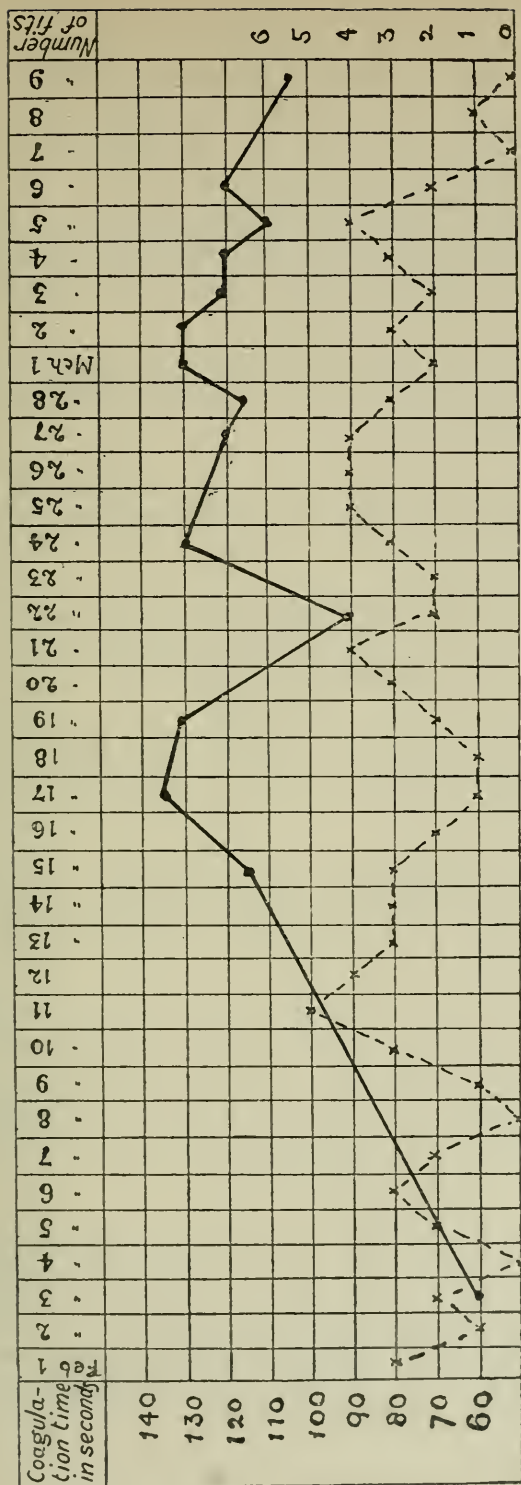
*Case 8.*—On February 5th, when free from fits, her coagulation-time was 180. On the 7th, the day after a strong fit, it was 130.

*Case 9.*—February 20th. On this day she had a fit, her coagulation-time was 120. On the 23rd, when she had been free from fits for two days, it rose to 165; on the 25th, after a fit, it fell to 145.

*Case 10.*—February 8th, having fits while the blood was taken, her coagulation-time was 90, the next day 75. On the 17th, when free from fits for a week, it rose to 105; she had no fits also for a week subsequently.

*Case 11.*—On February 8th, lying in a dazed condition, the result of four strong fits during the night, her coagulation-time was 60. On the 10th, able to walk and free from fits, it rose to 120 and next day to 140. On March 10th, again when having fits, it was 120.

*Case 12.*—On February 9th her coagulation-time was 65; she had five fits twenty-four hours previously. On the 16th, about twelve hours after a fit, it was 145; on the 17th, no further fits, it was 155. Again, on February 23rd, during a



CASE 7.—The continuous line records the coagulation time, the dotted line the number of fits in the twenty-four hours.



"fitty" period, it fell to 95 and on the 25th, when free from fits, rose to 165.

*Case 13.*—On February 10th and 12th, during a period of fits, her coagulation-time was respectively 60 and 120. On February 26th, 28th, and March 1st, when free from fits it was respectively 105, 180, and 130.

*Case 14.*—On February 12th, one hour after a strong fit, her coagulation-time was 105. On the 16th, no further fits, it had risen to 145.

*Case 15.*—On February 12th, four hours after a fit, her coagulation-time was 135. On March 8th, when free from fits, it rose to 160.

*Case 16.*—She had a succession of fits on February 11th and 12th, and on the 13th her coagulation-time was 135. The next day, no further fits, it had risen to 210.

*Case 17.*—On February 21st, in *status epilepticus*, her coagulation-time was 135. On the 24th, when recovered and free from fits, it was 150, and on March 8th, when free from fits, it was 165.

*Case 18.*—On March 27th, in *status epilepticus*, her coagulation-time was 95. The next day, fits having ceased for nearly twenty-four hours, it was 135 and the next 170.

*Case 19.*—I have only had the opportunity of testing a single case in which the fits were entirely of the *petit mal* type. Observations were made on a dozen occasions, and I was not able to determine any marked difference, in the coagulation-time, in blood drawn at or about the time of attacks and that drawn when she was free from attacks.

On the whole the evidence seems to me to favour the idea that serial or even single fits are associated with an increased tendency of the blood to coagulate.

In the following table are given the dates when examined, the coagulation-time in seconds, and the incidence of fits, of the nineteen epileptics previously referred to :

Case.	Date.	Coagulation-time (seconds).	Remarks.
1	Jan. 30	60	Another sample did not coagulate until 120 ; recently had a number of fits.
	„ 31	90	No further fits.
	Feb. 15	110	One fit on the 12th, one on the 16th, one on the 17th.
	„ 22	110	
	„ 24	120	One fit on the 23rd.
	Mch. 4	135	Two fits on March 3rd, one on the 4th.
	„ 6	130	One fit in the morning.
	„ 8	105	No fits.
Average		107	
2	Jan. 29	120	No fits for several days.
	„ 30	60	
	Feb. 4	100	On Feb. 2nd had one fit, on 3rd had three fits.
	„ 15	140	Two fits during the day.
	„ 19	165	No fits since the 15th.
	„ 23	120	Two fits on the 21st.
	„ 25	125	Another sample did not clot until 170 ; no further fits.
	„ 27	120	Another sample did not clot until 180 ; no further fits.
Average		119	
3	Jan. 31	75	Having fits.
	Feb. 19	150	No fits, nor for three days previously and three days subsequently.
Average		112	
4	Feb. 1	150	Has had no fits for several months ; only has single fits.
	„ 9	60	A fit this morning.
Average		105	
5	Feb. 1	60	Having a number of fits, and for several days
	„ 9	65	No fit for five days.
	„ 16	110	One fit this morning, first for five days.
	„ 20	110	One fit yesterday, none to-day.
	„ 22	115	No fit.
	„ 24	115	One fit.
	„ 26	105	„
	Mch. 1	140	One fit yesterday.
	„ 3	180	No fits to-day or yesterday.
	„ 6	155	One fit yesterday.
Average		115	

Case.	Date.	Coagulation-time (seconds).	Remarks.
6	Feb. 3	75	Strong fit two hours previously.
	„ 18	105	One fit to-day and several yesterday.
	„ 21	135	No fit to-day, and none for two days previously and several days after.
<hr/>			
	Average	105	
7	Feb. 3	60	Taken during a period when she was having several fits daily (two on day of observation).
	„ 15	115	Ditto (three fits).
	„ 17	135	Only one fit to-day.
	„ 19	130	Two fits to-day.
	„ 22	90	Two fits to-day, four yesterday.
	„ 24	130	Three fits to-day.
	„ 27	120	Four fits to-day.
	„ 28	115	Three fits to-day.
	Mch. 1	130	Two fits to-day.
	„ 2	130	Three fits to-day.
	„ 3	120	Two fits to-day.
	„ 4	120	Three fits before examination, three fits in the night after.
	„ 5	110	One fit.
	„ 6	120	
	„ 9	105	
<hr/>			
	Average	115	
8	Feb. 5	180	Not having fits.
	„ 7	130	Strong fit yesterday.
<hr/>			
	Average	155	
9	Feb. 6	120	Just after a fit, had two in the afternoon.
	„ 15	105	No fits.
	„ 20	120	One fit.
	„ 23	165	No fit.
	„ 25	145	One fit.
<hr/>			
	Average	131	
10	Feb. 8	90	Having fits whilst sample is taken.
	„ 10	75	Lying dazed on the floor, only able to walk with assistance. No fits since yesterday, but several then.
	„ 17	105	No fits for a week before, nor on the day, or for the week following.
<hr/>			
	Average	90	

Case.	Date.	Coagulation-time (seconds).	Remarks.
11	Feb. 8	60	Had four strong fits last night. Is lying in a dazed condition, unable to stand.
	„ 10	120	No more fits; much better; able to walk.
	„ 11	140	No more fits; much better.
	Mch. 10	120	For the last week has had two or three fits each night.
Average		110	
12	Feb. 9	65	Five fits the night before last; none since.
	„ 16	145	One fit yesterday, none to-day.
	„ 17	155	No further fits.
	„ 23	95	For the last four nights having fits (3, 3, 2, 1).
	„ 25	165	No fit since the 22nd, but one the night following.
	„ 27	125	Two fits each night for the last two nights.
	Mch. 7	120	Several fits in the last three nights (2, 5, 2).
Average		124	
13	Feb. 10	60	One fit yesterday afternoon, none previously for three weeks.
	„ 12	120	Four fits yesterday.
	„ 26	105	No fits recently.
	„ 28	180	„ „
	Mch. 2	130	„ „
Average		119	
14	Feb. 12	105	Strong fit one hour previously.
	„ 16	145	No more fits.
Average		125	
15	Feb. 12	135	One fit four hours previously.
	Mch. 9	160	No fits for some time.
Average		147	
16	Feb. 13	135	Succession of fits on the 11th and 12th; none to-day.
	„ 14	210	No more fits.
	„ 21	110	No fits since the 18th, on which date she had one.
	„ 23	100	No fits.
	„ 25	135	„
	„ 27	135	„
Average		137	



Case.	Date.	Coagulation-time (seconds).	Remarks.
17	Feb. 21	135	A few hours after <i>status</i> , in bed conscious but dazed.
	„ 24	150	No further fits.
	Mch. 8	165	„ „
Average		150	
18	Mch. 17	95	<i>In status.</i>
	„ 18	135	No fits since yesterday; in bed but quite active and cheerful.
	„ 19	170	Up and in usual health; no fits.
	„ 20	140	„ „ „
	„ 21	150	„ „ „
Average		138	
19	Mch. 31	170	Two attacks yesterday afternoon and one in the night.
	April 3	155	No further attacks noted.
	„ 4	165	One attack last night.
	„ 6	135	Three attacks last night, and two in the afternoon about 3 p.m.
	„ 7	140	No further attacks.
	„ 8	120	„ „
	„ 9	135	„ „
	„ 10	150	One attack last night and one in the afternoon.
	„ 11	120	Just after attack.
	„ 12	130	Two attacks in the night.
	„ 14	125	One attack yesterday at 10 a.m. and one in the afternoon.
	„ 16	155	No attack since the 14th.
Average		141	

## FIGURES.

FIG. 1.— $\times 400$ . Case No. 8: Rounded and dumb-bell-shaped bodies with concentric markings, lying in the cortex of the brain. The outer rim of these stains bright blue with toluidin blue; the centre is nearly colourless. They represent an earlier stage of the deposits shown in the next figure.

FIG. 2.— $\times 300$ . Case No. 8: Vitreous masses lying in the cortex and showing radial fractures. They still possess an outer rim which stains with toluidin blue, but their centre is colourless and glass-like. Notice the absence of any glial overgrowth in the vicinity of the deposits.

FIG. 3.— $\times 400$ . Case No. 15: Deposits lying around and alongside capillaries in a roof nucleus of the cerebellum. The section had first been treated with hydrochloric acid, subsequently stained with erythrosin and toluidin blue.

FIG. 4.— $\times 600$ . Case No. 15: Section not treated with hydrochloric acid. Vitreous deposits in the granule layer of the cerebellum. In the lower part of the

figure, lying around a capillary, are masses of a waxy-looking material, which take on a very pale tint with toluidin blue and are of the same nature as the deposits shown in Fig. 3.

FIG. 5.— $\times 600$ . Case No. 19: A Betz cell with swollen, bladder-like nucleus. The cell may also be used to illustrate an advanced state of the form which is met with in 70 per cent. of imbeciles, and which is indistinguishable from the axonal condition.

FIG. 6.— $\times$  (about) 100. Case 21: A wedge-shaped atrophic patch in the top of one of the foliæ of the cerebellum. The larger, dark, isolated bodies are granular corpuscles. Note the entire absence of granules in the atrophic region and the overgrowth of glia, especially in the position where the molecular and granular layers join.

FIG. 7.— $\times 600$ . Case No. 41: Cortical vessel containing a mass of blood-plates, which in places have fused together to form larger spheres.

FIG. 8.— $\times 400$ . Case No. 12: Hyaline spherical thrombi lying in a vein in the granular layer of the cerebellum.

FIG. 9.— $\times 400$ . Case No. 33: An arteriole and venule in the cornu ammonis; the former is plugged in its lower part by finely granular clot, which stains a paler green than the blood-plates, the small, round, darker bodies lying within the granular clot. In the venule is a hyaline spherical clot.

Figs. 7, 8, 9 were from photographs of preparations, prepared by Macallum's method for the detection of phosphorus.

#### REFERENCES.

- BLEULER.—*Munch. med. Woch.*, 1895.  
 BRATZ.—*Arch. f. Psych.*, xxx, 1, 3.  
 BUCKMASTER, S. A.—*Morphology of Normal and Pathological Blood*. London, 1906.  
 CREITE.—*Munch. med. Woch.*, 1903.  
 DRYSDALE, J. H.—*Path. Soc. Trans.*, 1904.  
 CLARK, L. PIERCE.—*Amer. Journ. of Insanity*, April, 1900.  
 HILL, L.—*The Cerebral Circulation*. London, 1896.  
 KOLK, S. VAN DER.—*New Sydenham Society*. London, 1859.  
 KUSSMAUL and TENNER.—*New Sydenham Society*. London, 1859.  
 MASOIN, P.—*Arch. Intern. de Pharmac. et de Thérap.*, 1904.  
 MOTT, F. W.—*Croonian Lectures*. London, 1900.  
 ONUF, B.—*Journ. Amer. Med. Assoc.*, April, 1905.  
 PFLEGER.—*Allge. Zeit. f. Psych.*, xxvi.  
 RONCORONI.—*Arch. di Psych.*, 1896.  
 TURNER, J.—*Journ. Mental Science*, 1903; *Ibid.*, Review of Neurology and Psychiatry, February, 1905, and December, 1905; *British Medical Journal*, March 3rd, 1906.  
 WEBER, L. W.—*Beit. z. Path. u. Pathol. Anat. d. Epilepsie*, 1901.  
 WORCESTER, W. L.—*Journ. of Nervous and Mental Dis.*, 1897.  
 ZIEGLER.—*Pathological Anatomy*. London, 1896.

(<sup>1</sup>) And since this was in print with another case, an epileptic, in whom there were extensive vitreous deposits in the cortex and meninges in sclerosed areas of each parietal lobe. This case was of interest, as it showed appearances supporting the view that the deposit originates from the blood. Masses of a waxy-looking material, in some places partly vitreous, which gave a positive reaction for phosphorus, were deposited in large amount in the muscular and adventitial coats of the meningeal arteries in these regions. Pick (*Neurolog. Centralblatt*, No. 16, 1903), who has drawn attention to the frequency with which the finer and finest vessels in the brain are calcified in tetany, states that the deposit sometimes con-

tains iron.—(2) Since this was written, by the kindness of Dr. D. Hunter, of Goodmayes Asylum, I have had the opportunity of examining the nervous system of an epileptic idiot æt. 13, in whom also a heterotopia spinalis was observed, with two central canals.—(3) The *Lancet* (November 24th, 1906) records a case of Bilharzia reported by Drs. Tsunoda and Shimamura, in which the patient suffered from Jacksonian epilepsy, and at the autopsy amongst other lesions a number of wedge-shaped areas of sclerosis were found in the brain. On histological examination these areas were found to contain ova in considerable number, which had doubtless produced embolism of the arteries. I quote these observations to support the view that cutting off the blood-supply of small areas of the brain does not necessarily result in softening.

### *Amentia and Dementia: a Clinico-Pathological Study.*

By JOSEPH SHAW BOLTON, M.D., M.R.C.P., Fellow of University College, London; Senior Assistant Medical Officer, Lancaster County Asylum, Rainhill.

#### PART III.—DEMENTIA (*continued*).

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#### GROUP I.—PRIMARILY NEURONIC DEMENTIA.

##### CLASS (B).

##### *Presenile or "Climacteric" Dementia.*

THIS class contains sixty-five cases of *presenile dementia*—i.e., of insanity ending in dementia, and occurring between the periods of maturity and of senility. Of the 728 cases of insanity under

consideration, the present class, therefore, includes 9 *per cent.*, and of the 445 cases of dementia 14.6 *per cent.* Though attention has already been drawn to the distinction which is necessarily made between "presenility," an age-period in all individuals, and "prematurely induced senility," it is perhaps permissible to remark here that cases of the latter type have been included in the class of "senile or 'worn-out' dementia," which was described and illustrated in the last section of this paper.

The present description is, therefore, concerned solely with such cases of dementia as occur at the presenile period of life and do not present indications of the premature onset of senility. These cases, at any rate when of the female sex, are, as a rule, referred to as "climacteric," and, as a considerable proportion of them exhibit some type of melancholia as the prominent symptom-complex, they are commonly referred to as examples of "climacteric melancholia." Kraepelin, in fact, appears to limit the term "melancholia" to the symptom-complex presented by cases of "climacteric" depression.

Under the present class the writer has included, not simply melancholias, but all the cases which he considers to be examples of involution of the cortical neurones at a date *prior* to the age-period at which this process may normally occur, but *after* these neurones have successfully resisted the maximum "stress" which necessarily accompanies their mature activity.

It is probable that in many patients of the female sex the grave metabolic disorders which occur at the "climacteric" may largely contribute to the onset of the process of neuronic involution. This is rendered the more likely owing to the occurrence in both sexes of similar metabolic disorders during puberty and adolescence, which at these periods undoubtedly influence profoundly—and in some instances directly precipitate—the development of premature involution of the cortical neurones. The generative organs, in fact, attain to functional activity later than the other organs of bodily function, and, at any rate in the female sex, normally retrogress earlier than these; and during their development and retrogression they induce general metabolic disorders, which necessarily often exert serious strain on such highly evolved and unstable elements as the neurones of the cortex cerebri.

Whilst it is not desirable to lay too great a stress on the



*necessary* influence of retrogression of the generative system over the onset and course of presenile involution of the cerebrum, this factor is undoubtedly an important one in many cases, and probably more commonly exerts a causative or contributory influence than do any of the other varieties of "stress" to which post-mature cortical neurones are subjected.

From the general argument with reference to the physical basis and nature of amentia and dementia, which has been so far elaborated in this paper, it is only to be expected that many types of case should be included in a class of presenile dementia. These types, however, readily fall, as a practical working basis, into the following four sub-classes:

	M.	F.	Total.
(1) Presenile mania with dementia . . . . .	7	12	19
(2) Presenile melancholia with dementia . . . . .	6	20	26
(3) Presenile insanity with dementia . . . . .	1	11	12
(4) Simple presenile dementia . . . . .	4	4	8
	<hr/>	<hr/>	<hr/>
Total . . . . .	18	47	65

Of these sub-classes the second, that of "presenile melancholia with dementia," predominates, but not unduly when the numerous types of symptomatology which are associated with mental depression are taken into consideration.

Though the number of cases (65 only) in this class is not large enough to justify elaborate statistical deductions, certain interesting details are readily elicited by an analysis of the data at the disposal of the writer, and these will now be briefly considered.

*Age.*—The average age, on the approximate date of onset of symptoms, in the 65 cases is forty-seven years, and it varies little either in the sexes or in the sub-classes into which the cases are divided. This is shown in the following table:

	M.	F.	Total.
(1) Mania with dementia . . . . .	48	45'5	46
(2) Melancholia with dementia . . . . .	47	47'5	47'5
(3) Insanity with dementia . . . . .	45	47'3	47
(4) Simple dementia . . . . .	50'6	46	48
	<hr/>	<hr/>	<hr/>
Total . . . . .	48	46'8	47

It will thus be seen that the writer, whilst employing a

clinical basis for selection, has included in the pre-senile class cases of a fairly corresponding age in both sexes, and has not, according to common usage, taken an artificial male "climacteric" about ten years in advance of the female. He feels justified in this course as he is not aware that the average duration of life in males is correspondingly longer than that in females, or that senility ensues in civilised races several years earlier in females than in males.

That females arrive at sexual maturity at an earlier age than males and that the capacity of procreation ceases in the former at a much earlier period of life than in the latter does not appear to him to justify the assumption that the pre-senile and the senile periods of life differ markedly in the two sexes. He prefers rather to associate the greater frequency of female pre-senile (in the sense here understood) cases with the grave metabolic disorders which occur at the female "climacteric," and hence he employs the term "pre-senile" (rather than "climacteric") to describe the cases here referred to.

The *average duration of residence* in an asylum does not differ markedly in the two sexes, being 5 years in the case of the males and 6·5 years in the females. The common average duration of residence is 6·2 years, and the individual duration in the case of the males varies from one to nineteen years, and in that of the females from one to twenty-three years.

*Previous attacks.*—The percentage of cases with previous attacks is 24·6, and these are distributed through the several sub-classes as follows:

	<i>Per cent.</i>
(1) Mania with dementia . . . . .	5·2
(2) Melancholia with dementia . . . . .	34·6
(3) Insanity with dementia . . . . .	16·6
(4) Simple dementia . . . . .	50·0

Without attaching undue importance to these figures it seems permissible to suggest that the percentages perhaps represent to some extent the respective facility with which the friends of the different classes of patient would be able to obtain their discharge from the asylum. This seems probable, because in only six instances was the interval between the attacks sufficiently long (7, 9, 10, 20, 22, and 24 years) to be evidence of actual "recovery." In all the other cases the interval was two years or less.

*Degree of dementia.*—The cases fall readily into two types, as regards the existing degree of dementia, about two thirds of the patients suffering from mild and slowly progressing dementia and about one third from a more marked but still only moderate grade.

When considered from the point of view of the incidence of dementia in the four sub-classes, the following interesting result is obtained.

	Mild.		Moderate.		Total.
(1) Mania with dementia	14	.	5	.	19
(2) Melancholia with dementia	19	.	7	.	26
(3) Insanity with dementia	9	.	3	.	12
(4) Simple dementia	2	.	6	.	8
	—		—		—
Total . . .	44		21		65

In other words, in the first three sub-classes three quarters of the cases exhibit mild dementia only, whereas in the fourth sub-class three quarters of the cases exhibit moderately severe dementia.

Considered as a part of the general argument which has been developed throughout this paper, this result is only to be expected, as the cases in the first three sub-classes should possess a distinctly greater degree of degeneracy and a relatively less proneness to the development of dementia than those in the fourth sub-class, in which obvious symptoms of "insanity" are replaced by those of "loss of mind." These last cases should, on the thesis already elaborated, have been precipitated by definite extraneous (primarily toxic) causes of undue severity, or should not have become insane at all. Such a cause is only too readily revealed by a study of the personal histories of the cases included in the four sub-classes, for ascertained intemperance in alcohol existed to the following extent :

	Per cent.
(1) Mania with dementia . . .	10·5
(2) Melancholia with dementia . . .	7·7
(3) Insanity with dementia . . .	16·6
(4) Simple dementia . . .	37·5
	—
Total . . .	13·8

It is therefore likely that both the actual existence of the sub-class of "simple dementia," and the higher grade of

dementia occurring in it, are associated with this high percentage of ascertained alcoholic excess in the included cases.

*Capacity for work.*—The percentage of actual and potential (*i.e.*, patients who refuse to work) workers agrees with what would be expected from the above remarks on the comparative grades of dementia in the different sub-classes. It is as follows :

	<i>Per cent.</i>
(1) Mania with dementia . . . . .	79
(2) Melancholia with dementia . . . . .	73
(3) Insanity with dementia . . . . .	75
(4) Simple dementia . . . . .	62·5
	—
Total . . . . .	74

*Social state.*—An estimate of the percentage of unmarried persons in the four sub-classes reveals the following interesting differences.

	<i>Unmarried. Per cent.</i>
(1) Mania with dementia . . . . .	30
(2) Melancholia with dementia . . . . .	12·5
(3) Insanity with dementia . . . . .	63·6
(4) Simple dementia . . . . .	42·8
	—
Total . . . . .	30·6

No explanation of these differences is attempted beyond the obvious one that the cases of melancholia were perhaps by normal temperament and general conduct more likely to obtain partners than were the members of the other three sub-classes.

*Heredity of insanity.*—The percentage of ascertained heredity of insanity in the sixty-five cases is 33·8. It is distributed as follows in the four sub-clauses :

	<i>Per cent.</i>
(1) Mania with dementia . . . . .	31·6
(2) Melancholia with dementia . . . . .	42·6
(3) Insanity with dementia . . . . .	25·0
(4) Simple dementia . . . . .	25·0

As in many of the sixty-five instances no family history was available, these figures hardly possess even a relative value. It may be here remarked that a history of heredity of *insanity*



is always unsatisfactory, as family and social conditions so largely decide whether a person should be sent to an asylum or not. The equally and often most important evidence of *family or parental degeneracy* is frequently not available and is usually not easy to obtain.

The writer has, however, thought it worth while to insert the above figures, although he is personally indisposed, except in the case of families which possess a number of well-marked examples of high- or low-grade amentia, to attach undue importance to an ascertained heredity of insanity.

He thinks it more probable that isolated cases of insanity arise from the intermarriage of ill-assorted couples and mild degenerates, and that the severer grades of family degeneracy follow the intermarriage of definite degenerates, rather than that isolated examples of insanity in either parental stock will be followed by insanity in the offspring.

He would, in other words, place the percentage of heredity at 100, with regard to the offspring of either degenerate or "normal" individuals, and, without going so far as to say that non-traumatic cerebral under-development or dissolution *cannot* occur in the absence of hereditary causes, would emphatically express his doubts with regard to its occurrence with any degree of frequency.

#### *Sub-class (1). Presenile Mania with Dementia.*

This sub-class contains nineteen cases, of whom seven are males and twelve are females.

The dementia present is of mild grade in fourteen of the cases and of moderate in the remaining five. The general symptomatology is variable, and comprises one or more of the usual symptoms of mania—*e.g.*, instability, excitement, restlessness, exaltation, garrulity, and incoherence, combined usually with unsystematised or partially systematised delusions of a religious, grandiose, or persecutory character, and in some examples with hallucinatory phenomena. In the more complex cases, therefore, the process of neuronc retrogression involves not only the centre of higher association but also the centres of lower association.

The average age of onset of the attack is 46 years, being 48 in the case of the males and 45.5 in that of the females.

The average duration of residence is 6 years, and varies from 1 to 7 (average 3·5) in the case of the males, and 1 to 19 (average 8) in that of the females.

Only one case, a married female, had suffered from a previous attack. This occurred at the age of 51, the present and final attack commencing at the age of 53, and the duration of this, when the case came under observation, being 9 years. Previous attacks are therefore rare in the present sub-class, as the presenile cases as a whole show a percentage of previous attacks which amounts to 24·6.

Of the nineteen cases, ten were workers (six good, one ordinary, and three poor), five refused to work, and four were incapable of work. The proportion of actual and potential workers is thus slightly above that in the presenile class as a whole.

The following four cases are inserted for the purpose of illustration :

*Presenile Mania, with Religious Delusions and Mild Dementia ;  
certified two years.*

CASE 408.—T. G. A—, male, married, bricklayer, æt. 55 ; certified two years and has shown symptoms since the age of 51.

A lively and intelligent man who, whilst I am examining other patients in the ward, answers questions for and calls out information about them. He gives his name and says he was born in 1847, which year is probably correct. He knows where he is, and mentions a number of names of places in the neighbourhood. He states where he has come from, and says that he had resided in that asylum since three years on the 23rd of next February. (Correct.) He knows the day and the date. He is married and volunteers the exact date of his marriage, and adds that he has no family. When I ask if his wife is dead, he replies "God gave His only begotten Son that whosoever believeth on Him shall not perish, but shall have everlasting life ; so she can't be dead." His mode of speech leads me to ask whether he is a preacher, when he states that he is not, but that he knows a bit about the Bible. He is a "bricklayer and a sanitary engineer." He used at his previous asylum to pour out the tea, to spread the bread and butter, and to oil the floors. He is lively and excited, and garrulous, and during conversation repeatedly brings up religious matters. He states that his mother looks after him, and when I suggest that she is dead he excitedly repeats the above text. He used to go round with the Salvation Army, but "missed my chance, as I was offered conversion ; still, God is the same yesterday, to-day, and for ever." All his life he has lived amongst people who told lies. He thought that he was telling the truth when he spoke to the different gentlemen for whom he worked, so as to be different from his father and "shame the devil and tell the truth." He hopes to get out of the asylum so as to

get converted by the Salvation Army. "I have the sin of a hasty temper and don't know of anything else. I once struck my missus, and she got a poker and struck me and made the blood fly." He is excitable, jovial, and exuberant; and garrulous, self-centred, and introspective.

Whilst under observation he was excitable, quarrelsome, and fond of airing his religious views and indulging in stump oratory, and he persistently refused to work.

*Presenile Mania, with Mild Dementia; Partial Incoherence; Delusions of Persecution; certified seven years.*

CASE 409.—J. P. C.—, male, single, seaman, æt. 50; certified seven years. Cause stated to be "sunstroke." Aunt insane.

Skin coarse, eyes sunken, marked horizontal wrinkles on forehead. Palate high and deep in front. Reflexes all exaggerated. Much muscular tremor and marked tremor of tongue. Left testicle atrophied and only partially descended. During examination of the last the patient remarks, "Your closets have served it with his devils and apes and f——g matches."

Patient gives his name and says his age is 54, and that he was born on March 14th, 1854. (The latter is probably correct, and the former should then be 50.) He knows where he is, where he has come from, and when he came, also the day and the month and year, but not the date, but "I doesn't keep count of dates." He was at his previous asylum three and a half years, and was before that at H— asylum "keeping dungeon, when your first b——y good keeping b——y in Christ started their b——y in Christ lunatic asylum." He says they put women in their beds, "packs of b——y God bucks and Christ bucks, and not of women round H——shire, and clever God Lord Christs, and devils, and going about to murder, liars, murderers, and reptiles." He hears these people talking "I know well enough how many times." He is garrulous and excited, and most of his language consists of stereotyped and inconsequent repetitions of persecutory words and phrases. He intends in the next life "to give something strong to people for every minute I've been robbed in the dens . . . and every hound of you concerned in it."

Whilst under observation patient was excitable, unstable, and at times troublesome, and was very little use as a worker.

*Presenile Mania, with Delusions of Persecution and Mild Dementia; certified five years.*

CASE 411.—A. O.—, male, married, retired ship's steward, æt. 59; certified five years, and has shown symptoms since the age of 51.

A dull-looking man of florid complexion, who tries to see what I am writing. He gives his name and states that his age is 60 next March. He knows where he is and where he has come from and when he came, and also the present day and the approximate date. He is "right in every way and as straight as a man can be. I wish to earn my living. My forehead is very tender." He was at his previous asylum five years, and was twenty-three years in the L.&B.S.C. Service. He is very garrulous with reference to the persecution from which he suffers. He

says that he was attacked by a patient just before coming here, and since then has been badly attacked by and undressed by two attendants. He also complains of the dirty clothes he has to wear. He has had his face all smashed to pieces by people in the asylum, and his eyes have been filled with blood many times. He boasts of his cleanliness of body and mind. "I wouldn't be in such a place so long if I hadn't enemies. There's something hanging me up that shouldn't be here." He suffers from auditory hallucinations. "Filthy rattle and chirrup that disturbs people's rest. Them that does the harm should suffer if there's any penalty." He hears women "talking in good part in jokes." He has "never harmed a woman or given any chance to a woman to harm me." He is very garrulous, excitable, and querulous.

Whilst under observation patient was restless, excitable, and quarrelsome. He constantly complained of persecution and ill-usage, and persistently refused to work.

*Presenile Mania; Inconsequence; Sham Deafness; Mild Dementia; certified twelve years.*

CASE 424.—C. E. R—, female, married, housewife, æt. 63; certified twelve years, and has shown symptoms since the age of 47. Cousin insane.

A wrinkled old woman who at once shows me her husband's address on a letter, and says that she lives "on the estate." She gives her name and tells me that her husband didn't put her away, but that she was brought away and stripped of all her possessions. She is very anxious for me to read the addresses on a number of letters. She informs me that "all people are not Jews, but I know you are one." "I got deafer since I came away but I know the meaning of the world." She states that her husband's employer is cousin to the old Marquis of Salisbury who is dead. She talks on rapidly and inconsequently about this peer, the "young lord," etc., and becomes very excited. Eventually she remarks that the secretary of the Marquis was a Jew, and then becomes still more inconsequent, and her association of ideas becomes very rapid and difficult to follow. Accidentally using the word "son" she says "sun, moon, and stars, frost and dew; it proceeds from our mothers and fathers. That's what the world is." She still, however, inserts such phrases as "Some of the Jews was but to think they done such things" and "There's no craziness in me." These suggest ideas of persecution. She pretends to be quite deaf, but as I somehow suspect that this is not so I repeat quietly "I'll swear you've stolen those letters," with reference to the bundle of letters in her hand. She then at once looks up, says "You're a liar! you work underground, you do," and gets violently excited and abuses me roundly.

Whilst under observation she was excitable and unstable, and at times garrulous, but she was a good and useful worker.

*Sub-class (2). Presenile Melancholia with Dementia.*

This sub-class contains twenty-six cases, of whom six are males and twenty are females.



The degree of dementia is mild in nineteen cases and moderate in the remaining seven. The general symptomatology is that commonly described as "melancholia" or "climacteric melancholia," and all the usual types of hypochondriasis and melancholia are represented. In many, in fact in the majority, of the cases the centres of lower association are more or less involved in the process of neuronie dissolution, this in some instances extending even to the simpler grades—*e.g.*, in certain cases of hypochondriasis.

The average age of onset of the attack is 47·5 years, and it differs little in the two sexes.

The average duration of residence is 5 years, varying from 1 to 16 (average 7) in the case of the males, and from 1 to 13 (average 4) in that of the females.

In marked contrast to the rare incidence of these in the previous sub-class, no less than nine of the twenty-six cases had suffered from previous attacks, and this is considerably above the average frequency in the presenile class as a whole.

The interval between the attacks was, in six of the cases, from one to two years. Of the remaining three cases, in the first the patient was insane at the age of 25, and the present attack began at the age of 47; in the second the previous attack occurred at the age of 42, and the present at the age of 51; and in the third the patient was insane at the age of 21 and then at the age of 45, the present and final attack beginning at the age of 46.

As regards social state, the cases in this sub-class differ from those of the other types of presenile case in including only 12·5 *per cent.* of unmarried persons, whereas the average for the whole class is 30·6 *per cent.*

Of the twenty-six cases, fourteen were workers (eleven good, two ordinary, and one poor), five refused to work, and seven were unable to work.

Owing to the great variety and interesting nature of the included types it has been thought desirable to insert a larger number of illustrative cases than usual. It is worthy of note that two of these, No. 433 and No. 434, are sisters.

*Presenile Hypochondriasis with Mild Dementia; certified sixteen years.*

CASE 426.—J. H—, male, married, æt. 64; certified since the age of 48. Nephew insane.

A moderately healthy man with a large epithelioma of the left cheek. Face congested.

He speaks rather thickly owing to his deformity, but quite intelligently. He gives his name, and states when he came here and where he came from, and he knows approximately where he is. He gives the day and can reckon out the exact date. His age is 63, and he was at his previous asylum fifteen years. He has had his face bad for six or seven years. It was originally inside the cheek, and grew through the skin. At his previous asylum he has done work at bed-making and dusting up to about a month ago, and since then has not felt so well. When asked about voices he replies "I don't think I have very much." Before he went to his previous asylum he "took some medicine, and it sealed down tight and exploded through my head, and caused a drain off in my face. When the medicine exploded it broke my left arm, and this arm is off now." (Untrue.) "My legs have been out of place, not very much. Sometimes it works off my bowels when an extra lot of it comes off. I was quite coated with it and it is dropping off by littles. It was taken as medicine. I was cured at the time with it, but it laid all on me and takes some time to ripen and fall off by littles. I can feel it now coated on my heart and lungs. That that leaves the heart and lungs is the strongest and physics me the most. I can smell that which comes from my heart."

Whilst under observation patient was dull and apathetic, and at times somewhat depressed. He was a moderately useful worker, but was very willing to do what he could.

*Presenile Hypochondriasis ; "Pseudo-hallucinations" ; Mild Dementia ; certified eight years.*

CASE 427.—D. B. D—, male, married, photographer, æt. 54 ; certified eight years, and also a year previously at the age of 45. Paternal aunt insane.

A vacant-looking and phlegmatic man, who, when I ask whether it is morning or afternoon, says "Well, I hardly know." He says that he has been told the name of this place, but doesn't know where it is. He came "from G—, I know that." He cannot say how long he was there as "I feel in a dirty idiotic state, nasty and wet, and day and night is a terror." He hears filthy, indecent, and obscene words very frequently, and "*It comes to me and makes me perfectly rotten.*" *The words come into his mind, and it is not as if anyone was speaking—they arise in his mind day and night.* He doesn't know whether his appearance is altered or not (in reply to a leading question), for he has never thought of it like that. He has been married, but doesn't know whether his wife is alive. He doesn't know the day or date, but knows the month and year. "I look at the paper from time to time to see the date. I have not looked lately and so do not know it." His "insides feel rotten, and brain all rotten, all rattle, rattle. Cannot think of anything—all jumbled up." He owns to fairly frequent masturbation, which habit he explains by saying that it was the common thing at G— to find people in bed doing it, and so he did the same. "Feeling got so strong seeing

'em all at it, and nothing to do, that I did it. Of course it's a shameful thing to say, but there you are. I did it everywhere, in waterclosets, bedrooms, and outside and all over the place."

Whilst under observation he was hypochondriacal, and at times very worried and depressed. He was irritable and if not left alone was quarrelsome and impulsive. If, however, he was not interfered with he was a willing and useful worker, and he was very amenable to discipline when treated kindly.

*Presenile Melancholia, with Moderate Dementia; certified four years; sister of Case 434.*

CASE 433.—H. C—, female, single, laundry-hand, æt. 54; certified since the age of 50, and previously between the ages of 48 and 50. Sister of Case 434.

A dull and somewhat depressed woman, whose face is covered with fenestrated scar-tissue from former confluent small-pox. Palate very high, narrow, and deep in front. Knee-jerks absent. She gives her name, and knows where she is, and where she has come from, also the day on which she came, and the present day, the month, and the year. She has no idea as to the date, although it is only the second of the month. She thinks her age is 52 or 53. She cannot say how long she was in her previous asylum, but was certainly there several weeks (four years). Before going to work in the laundry she kept house for her brother. Whilst in her previous asylum she did a little county needlework. She cannot give any clear account of herself, and is very dull and slow in replying to questions. She owns to at times being depressed, but denies ever having thought of injuring herself.

Whilst under observation patient continued dull and quiet, was at times depressed, and did not occupy herself in any way.

*Presenile Melancholia, with Moderate Dementia; certified seven years; sister of Case 433.*

CASE 434.—F. M—, female, married, housekeeper, æt. 49; certified since the age of 42. Sister of Case 433.

A dull and phlegmatic woman, with many fine horizontal wrinkles on an otherwise perfectly smooth forehead. Palate high, and becomes narrow anteriorly. Finger-nails bitten into the quicks. Patient gives her name, and knows where she is, where she has come from, when she came, and the day to-day. She had been at her previous asylum some three or four years (nearly seven). Her age is 56. She is married, and has a son and two daughters. She cannot remember the year in which she was married, and when asked the colour of her wedding-dress she states that she knows but that it doesn't matter now. She is very slow indeed in replying to questions. She remembers going to her previous asylum, and thinks she must have been low and depressed when she went there. She was only in two wards during her residence in that institution. She did a little needlework there, but not much as her eye-sight has become so bad. She is better able to give informa-

tion about herself than her sister is, but she is, if anything, still more slow in replying to questions.

Whilst under observation she was as a rule mildly depressed, and was very dull and apathetic. She at times did a little work, but was not of much use.

*Presenile Melancholia; Apprehensiveness; Mild Dementia; certified two years.*

CASE 436.—S. P—, female, married, housewife, æt. 56; certified two years. Paternal uncle insane.

A dull-looking woman, with much loss of facial expression. She has a habit of almost constantly biting her finger-nails. She gives her name, and says she thinks her age is "57 or perhaps 56 next September." She knows the present day, and when she came, and the approximate date. She is doubtful about the year, but at last answers correctly. She knows where she is, and where she has come from, and thinks she was there about two years. When asked when she went there, she replies, "If this is 1903" (and she seems very doubtful in spite of reassurance), "it must have been 1901." In her previous asylum she did what the nurses told her. "I have been *willing* but would not say *useful*." She felt very miserable whilst there, and has done wrong in many things. The recollection of her fancied wrong-doing makes her look very depressed. "I have not done my duty," and that sums up the whole of her offences, including those with regard to her husband. She in consequence thought of making away with herself by getting out of the window. She tried to do this, but her husband stopped her. Her worst trouble now is that her husband thought her last asylum was a "proper lunatic asylum," but it was not, and "I hardly know what name to give it. It was worse than an asylum. They treated them unkindly." She is very apprehensive, and is especially afraid of being sent back to the asylum from which she has come.

Six months later patient was stouter, but very dull and depressed. Her age is 55 to 60, and she is married, and her husband is alive. (A short time previously I informed her myself that he was dead.) She does not know the date, but can give the month and the day of the week, and the month in which she came here. She hesitates over the name of the charge nurse, whom of course she ought to know, but at once gives that of the head nurse. When I ask who I am, she replies, "I don't know quite who you are," but after an interval gives my name correctly. Her finger-nails are bitten into the quicks, and she is constantly nibbling at them, and especially so when agitated. She is solitary in her habits, but a hard and useful worker at either ward or needlework. When examined at bed-time by the nurse she is always afraid that she is to be hurt. She once asked what the poison bottles in the cupboard were for. When her work is done she sits quietly, never talks to anyone, and never reads or writes. At times she is rather contrary, and she often tries to stay in bed in the morning, but she is never either troublesome or spiteful.



*Presenile Melancholia*; "Resistive Stupor"; *Apprehensiveness*; *certified upwards of a year.*

CASE 440.—E. A—, female, married, housewife. æt. 53. Certified upwards of a year.

A restless, fidgety woman who objects to sit down. She is unable to attend to herself, she has to be washed and dressed, and is wet and dirty in habits. She is on mince diet and feeds herself, which is practically the only thing she does. She strongly and violently resists examination and eventually says "Don't, don't do that!" She notices what is going on around her, and at times looks round. She will not reply to questions or give any account of herself. She is quiet, except for restlessness, if left alone, but if interfered with in any way she at once becomes resistive and struggles.

Patient continued unchanged whilst under observation.

*Presenile Melancholia Agitata with Mild Dementia*; *symptoms for at least ten years.*

CASE 441.—F. J. M. F. B—, female, widow, formerly housewife, æt. 62. Symptoms for at least ten years.

A very depressed old woman who when in bed is continually rocking herself from side to side, and whenever she has a chance gets out of bed and wanders about. The hair on the vertex is nearly all rubbed off owing to constant friction, and patient spends a good deal of her time picking and biting her finger-nails into the quicks. She is never still a moment and will not sit down. Her face is at times blank, but usually wears a very woebegone aspect. Patient talks readily and gives a fairly good account of herself and her illness. "Twenty-four years ago or more I had a very serious illness; there was a gas explosion when the youngest child was born; and I became very convinced of sin, and ever since then I have had more or less of bromide. Dr. T— gave me bromide for ten years" (she has been under treatment for this time) "and I haven't slept for a minute without. I have done all kinds of things wrong. I don't know that there is any exception." She thinks that she has committed nearly every sin, and when asked about murder says "Well, no, but I've destroyed my body and lost my soul." (Secret sins?) "God knows." When I suggest that she has been a good wife she admits "I suppose I was at one time." With reference to self-injury, she says that she stumbled and hit her jaw against something in the dark, "against the sharp edge of a shelf." "Someone said I did it myself but I didn't." (Tried to harm yourself?) "Well, not with any intention . . . Well, I walked into some shallow water once, but I was under some drug, I believe, not Dr. T—'s, but some other doctor's, I think morphia." She has, however, "though not of that kind, done lots of worse things, sins." She begs me to give her a draught as she is "so restless and cannot rest at all. Dr. T— gave me bromide in the day," and she gets extremely agitated. She knows where she is as she has "seen the name on something or other, and it's very awful to be here." (Day?) "Wednesday or Tuesday,

yes, *Tuesday*, I think." (Correct.) She knows the date approximately, and when she came, etc., etc.

Whilst under observation she was for some months quite unchanged, very troublesome, and never appeared to sleep day or night except when given a sedative. Later she became somewhat quieter and slept better, though she showed little or no actual mental change.

*Presenile Hypochondriasis with Delusions of Persecution and Moderate Dementia ; certified nine years.*

CASE 442.—E. M. B—, female, married, housewife, æt. 56. Certified since the age of 47, and previously certified at the age of 25. Grandfather committed suicide.

A nervous woman with a constant frown and numerous fine horizontal wrinkles on her forehead. Her lips are pursed up and her eyelids occasionally blink. Hands flat and spade-like, and skin of extremities shining and atrophous. Patient gives her name and her age as 46. She knows where she has come from, and was in that asylum a few years. She knows the day and the month, but neither the date nor the year. She is extremely slow in answering questions. She states that of late she has done bed-making and cleaning (her hands negative this statement), and could sew if her arms were not so affected by machinery. It seems like "train-work," and she compares it to "the chain between the buffers of railway carriages." She does not know who works it as she "wasn't an engine-driver's wife at any time." Her legs are not painful this morning, but sometimes it draws them up. It makes her head ache very much sometimes. It is the machinery that has made her bones so conspicuous (she is thin). It has never been in her stomach. One of her sons is suffering at H—. He always seems to be crying, and has been there four or five years (as far as can be made out, this is a hallucination). Yesterday patient was very excited and hysterical for a short time, probably in consequence of her transfer here.

Whilst under observation patient continued mentally unchanged, she frequently complained of the torture she suffered, and she did not employ herself.

*Presenile Melancholia with Mild Dementia ; certified one year, and also twice previously.*

CASE 445.—C. E. T—, female, married, housewife, æt. 47 years. Certified one year. Previously certified at the ages of 45 and 21. Grandfather and cousin (paternal and maternal) insane.

A dull-looking woman, with Mephistophelian eyebrows and a surly expression. She gives her name and age, and knows when she came, and the day, the date, the month, and the year. She knows where she has come from and was there eleven months. She did no work at that asylum, as she thinks she is "lost, and it makes me feel so wretched that I can't work. I feel that I'm eternally lost. Something tells me inwardly, my heart says that I'm lost for ever." The feeling came

on her eighteen months ago quite suddenly (it is two and a half years since she went to the asylum for the second time, and a few days under a year since she was certified this time). She was in business with her husband, who is a butcher, and "it came to me in the night that I was lost for ever. I feel in a dreadful state. I don't know how to sit still. Such a dreadful feeling within. I can't read or anything. If I'd done anything I could have confessed it and got it off my mind, but I don't know what I've done."

From the time of her admission patient was obviously a chronic case. Whilst under observation she continued unchanged, and she persistently refused to work, at any rate continuously. She became rather more dull, and her depression and its expression became more mechanical.

*Presenile Melancholia Agitata with Mild Dementia; certified four years.*

CASE 446.—S. H—, female, married, housewife, æt. 47. Certified four years. Mother and maternal cousin insane.

A very restless and depressed woman, who pays no attention to questions, but, in a state of uncontrollable agitation, rapidly makes such statements as the following: "Oh! my God! will they burn me? Oh, dear! Oh, dear! I took the Sacrament wrongfully when I was thirteen years old, and I must be burned." . . . "Oh! my God! my God! Don't think anyone should be burned, do you? They shouldn't throw a cat on the fire. I was first-hand dressmaker in B— thirteen years." . . . "My mother was in H— three times." . . . "I think to be burned must be dreadful. I used to make Miss B— fourteen yards of lace at a time like that" (showing me some). . . . "Oh, dear! If they burn me! My God! my God! Oh! my God! My God! Oh, dear!"

After a time she settles down a little, and tells me where she is, when she came, where she came from, the day, the month, etc. The last fact causes her to add that she was married in the month of October (the same month), and has a husband 6 ft. 2 in. in height and 17½ st. in weight. Her agitation continues during her replies to questions.

Whilst under observation she, during the first few months, spent most of her time wandering to and fro restlessly, and loudly bemoaning her fate, whilst all the time she was engaged with almost inconceivable rapidity in making lace. Later, after several methods of treatment had been adopted in order to decrease the nuisance she caused, but without success, and after she had been tried in nearly every ward in the asylum, she was placed on bromide. She shortly afterwards became quiet and feverishly industrious, and developed into a useful sewing-room worker, though she was still somewhat unstable and liable to restlessness, but rarely to noisiness. She was then well-behaved and very useful, but somewhat childish.

*Presenile Melancholia with Mild Dementia; much Emotional Instability and Apprehensiveness; certified one year.*

CASE 449.—M. R—, female, married, housewife, æt. 47. Certified one year, and first showed symptoms at home some four years previously at the age of 42; brother insane.

A restless woman, who has just pulled her bed to pieces. The only noticeable features in her appearance are her red and expressionless face, and her plain, monkey-like and lobuleless ears. She sits up with a finger in her mouth, turns shyly away and grins inanely. She refuses to reply to questions, and laughs in a silly manner when spoken to. Eventually she gives her name and says, "If you please I wish to go home." She gives her age as 47, and says that she was at her previous asylum two or three months, and that it is "shameful how I've been treated if this is H—" (her previous asylum). She insists that she has been here two or three months, but under three (two days only). (Day?) "No, sir, I wish to go home; you've not any right to detain me here." She knows neither the day nor the date. As she talks on she becomes gradually depressed, and remarks: "Everyone troubles me; I've been put on the hunt ever since I came here or a fortnight after." She has heard someone reading at night, and thinks it was "the nurses down at C— Place." She remarks that she is "not suffering from delusions." She obviously has fears of sexual interference, as she remarks: "Respectable made woman! I won't be treated in this way"; and during examination of her abdomen she resists violently and tries to pull up the sheet. She then becomes very depressed, and her eyes suffuse and she says: "I'm not here for any offence, my husband pays so much a week for me."

Some months later the condition of this patient had changed very little. She repeatedly remarks: "Oh, I *must* go home! I *must* go home! I'm going home, please God!" She does not know who the people are who talk to her, and then adds: "Oh, I *must* go home! I don't like this place at all. I'm going home as soon as my husband comes." The voices accuse her of "all kinds of things," and she here laughs in an erotic manner. She rapidly, however, relapses into a tearful state and repeats her cry, "Oh, I *must* go home."

As a rule she is restless and often wanders about. She is very excitable, and often very noisy, and has been violent. She often refuses to undress at bed-time and has to be undressed, and in the morning she at times refuses, till pressed, to get up and dress herself. She is fairly clean in her habits, but has been dirty after medicine. She often gets up suddenly and says that people are annoying her. Sometimes she works, and she can sew very nicely. She may also dust and make both her own and other beds. She, however, tends to give up working and to wander about, and is of no use as a worker. She reads and at times writes. She is at times noisy at nights.

### *Sub-class (3). Presenile Insanity with Dementia.*

This sub-class includes twelve cases, of which one is a male and eleven are females.

The grade of dementia is mild in nine cases and moderate in three. The general symptomatology is variable, and abnormality of the emotional tone is not a prominent feature.



Certain of the cases, which possess a greater degree of degeneracy than the remainder, present a symptomatology similar to that of the class of "cranks and asylum curiosities" which has been described under High-grade Amentia; and in nearly all the cases of the sub-class there is at least some dissolution of the centres of lower association.

The average age of onset of the attack, 47 years, is that of the presenile class as a whole.

The average duration of residence is longer than that of the whole class, namely nine years, and it varies from one to twenty-three years.

Only two of the cases suffered from previous attacks. In one of these this occurred one year and in the other twelve years before the present and final attack.

As regards social state, this sub-class differs markedly from both the last, and from the presenile class as a whole, in containing no less than 63·6 per cent. of unmarried persons. The majority of the cases, in fact, are spinsters of eccentric habits.

Of the twelve cases, eight were workers (three good, four ordinary, and one poor), one refused to work, and three were incapable of work.

The following three cases are inserted for purposes of illustration :

*Presenile Insanity with Mild Dementia; Garrulity, Inconsequence, Eccentricity, Delusions; certified seven years.*

CASE 454.—O. N—, female, single, dressmaker, æt. 52. Certified since the age of 45, and previously very peculiar in her behaviour.

A garrulous woman, with much loss of facial expression and a very assertive manner. She at once tells me that she is "Miss O. N—," and that she got this name "right from the Queen of England and Empress at B—." When I call her by her Christian name she objects, as she could not be spoken so to when going out to her work at B—. She asks me if I am copying down what she is telling me, and on my replying in the affirmative she states that she was mistaken at B— (her previous asylum) for people called by names similar to her own, but different in the spelling. She gives me no less than six methods of spelling similar names, sees that I write them down, and solemnly warns me against anyone and everyone possessing such names. She tells me that many people have taken the name of N—, as she spells it herself, because they knew that she had "got into no scrapes," and they therefore thought that they would thereby become possessed of her spotless character. She talks rapidly and almost inconsequently,

but in a very grandiose manner, and seems to have numerous ill-defined ideas of persecution. When asked the name of the asylum in which she now is, she reads it on the sheet and asks me where it is. On my replying that it is near E—, this remark at once brings up a host of reminiscences, and it is difficult to get her to allow me to ask her further questions. She knows when she came and where she has come from. She knows the date within a couple of days, and when asked the day says yesterday was Tuesday and to-day is Wednesday; and then remembers that yesterday was Wednesday and says that to-day is Thursday (correct). She informs me that "people at times get out of their prison-specks and fly about like birds, but if you discover who they are and say, 'Is that you, Mrs. So-and-so?' you break the spell and they have to go back again." She also tells me that people outside are able to see what is in one's pockets, etc., and she most strongly and indignantly complains about this.

Whilst under observation she was usually quiet and well behaved, but was most peculiar and old-maidish in her habits. She refused to work, and was often aggressive and dictatorial. She used to persist when going out-of-doors in wearing something white, *e.g.*, a sunshade or a white veil, etc., and if prevented would get violently excited and insist on staying in.

*Presenile Insanity, with Mild Dementia; Eccentricity; Delusions and Hallucinations; certified eight years.*

CASE 456.—L. T—, female, single, domestic servant, æt. 62; certified since the age of 54.

A curious looking woman, with a Mongolian-shaped head and a somewhat "death's-head" appearance. Hair short, chronic seborrhœa capitis. She gives her name, and states that her age is nearly 60. She knows where she has come from, was there about seven years, and was previously in a situation. She knows when she came here, and the day and date. She informs me that poison was put in her food by her mistress, "who was told by someone, under pretence of religion, to do it." It was a woman, not a man, who did this. Her mistress used "West Indian poison pencils," and several modes of persecution were also adopted towards her before she went to the asylum. Occasionally, whilst there, poison was put in her food, and she thinks that "someone came into the house to perjure Miss D—, the matron." A little jackdaw talks to her, and says he was a Scotch priest when he was on earth. If there is anything wrong with her at night "he will tell me pretty quick, if not at other times. He speaks very well. He was burnt at C—, and was told to stay about a certain number of years. He came down with the other tame birds when they came to dinner. He said there were some birds, and about thirty were little 'Gurds' which have a different nail. These are little God-birds." She thinks she has seen him once here. "He said just now 'I can see you, but you can't see me.' They are very smart in looking after poisoners and robbers' gangs." He tells her that he christened her, and so has a right to look after her. The eczema on her scalp was put into her stomach, and was discharged on to her head. She passes by the name of T—,

and has been brought up under this name, but he tells her that he christened her "Panella."

Whilst under observation this patient continued mentally unchanged. She was a quaint and interesting old woman, and a great favourite. She was a very willing and useful worker, but a great chatterbox and very childish in some of her ways.

*Presenile Insanity, with Moderate Dementia ; Delusions and Hallucinations ; certified eleven years.*

CASE 459.—F. H—, female, married, housewife, æt. 55 ; certified since the age of 44.

A healthy-looking woman, who at once begins in a querulous voice to inform me of her troubles. "It is not right, as I am so stretched. Tea and coffee pass, but not other things. My speech is very bad under my tongue." She knows where she has come from, and when asked how long she was there, she replies, "I didn't notice the time. We might be standing in error." When asked how long it is since she came here, she says, "As I counted day and night home, this makes the eighth day" (three days). When asked the day, she says, "I think it was Tuesday" (Thursday). Her age is "62 in January," and she volunteers that she has three children, "for what I should believe. Take the case of *them*." When asked about hallucinations, she replies, "I am too dead for voices now, but hear noises underneath." She thinks that she died "four years last July. I smelt death when I was there. They pulled my shoulders back, and so oppressed me. My husband was buried five years ago." She says that she is still dead, and that her hands are "not a colour open to ruts in different kinds of ways. I'm not alive to my nature. We expect to rise as Christ rose." She is very anxious to be buried.

Some months later patient was mentally unchanged. She is "very poorly, and badly done by." A Dr. W— can act on her and draw her wind or take her speech when he likes, and other people in different parts of the world can do the same. She lies very quiet at night as she hears "bangings. I have not any voices now. I'm too far gone for voices." She knows the day and the month, but neither the date nor the year, and she has been here eleven weeks next Friday. She came here from "the house where they deceived me to, there at first."

She is clean, and fairly tidy. She works fairly usefully, and can be depended on. She rubs the floors, sews at times, cleans brasses, etc., and at times makes beds. She usually makes her own bed in the morning. She is very excited and noisy at times about "chains," and often wants "to be undone" from these. She is often noisy at night owing to electricity, and to people under the floor. She is sometimes quarrelsome, and she often laughs and talks to herself.

*Sub-class (4). Simple Presenile Dementia.*

This sub-class contains eight cases, four of which are males and four females.

The grade of dementia is mild in two cases and moderate in six. In this sub-class, therefore, the dementia is well marked in three quarters of the cases, whereas in all the other sub-classes it is mild in no less than three quarters.

As has already been stated, it is likely that alcoholic excess has at any rate contributed to this difference, as the percentage of ascertained intemperance in the four sub-classes is respectively 10·5, 7·7, 16·6 and 37·5.

It is hardly necessary to remark that in this sub-class the process of neuronie dissolution is both more advanced and more generally diffused than is the case in the other sub-classes.

No less than four of the eight cases have a history of previous attacks, which occurred at the respective intervals of one, two, seven, and twenty years prior to the present and final one.

Three of the eight cases were workers (one good, one ordinary, and one poor), two refused to work, and three were unable to work. The proportion of workers is therefore lower than in any of the other sub-classes, as might be expected in view of the greater amount of dementia which is present.

The following four cases are inserted as illustrative examples of the contents of the sub-class :

*Simple Presenile Dementia of Moderate Grade ; Syphilis ; Intemperance ; certified five years.*

CASE 465—J. N—, male, single, bricklayer, æt. 56. Certified since the age of 51. History of syphilis and intemperance. Nephew in this asylum.

Pupils equal and react to light and accommodation. Tongue tremulous. Palate high, of average breadth, and deep in front. Knee-jerks dull. Superficial reflexes brisk. Scar to the right of and below the meatus. Chronic syphilide on body, limbs, and forehead.

A pleasant-looking but rather dull man. He gives his name and says his age is "32 or 3" He thinks this place is B— parish as it is not N— Union. He says he cannot read, and supposes that he has come from N—. When the name of his previous asylum is mentioned he says "Yes, sir, I have heard of it before." Ever there? "No, sir." He knows neither the day, the month, nor the year. He owns to "drinking a drop" and supposes that I have too! He does not know any one here. Asked what he has been doing lately, he replies "Lying down." When asked what *work* he has done, he replies "I know what work I *have* done, not what I *can* do now."

Whilst under observation he remained dull and apathetic and refused to work.



*Simple Presenile Dementia of Moderate Grade ; Intemperance ; symptoms for one year.*

CASE 467.—T. K—, male, widower, general labourer, æt. 48. Certified some months and has shown symptoms for one year.

Face blank, eyes restless, nose greasy, marked flush on face and forehead. Pupils 4 mm. and react rapidly to light and accommodation. Tongue is protruded by instalments. Palate high average; much pigmented scarring of legs, especially the right. Frenum has been badly torn. Knee-jerks ++. Plantars normal. Patient is at present wet although he was only examined a few minutes ago.

Patient gives his name and says that his age is 26 and that he has not been married. He came "the other day." He neither knows what day nor the day to-day. He thinks it is "somewhere about winter" (September). He does not know where he is. He came from "B— way somewhere" (approximately correct). He does not know the time of day and has not had his dinner (3.45 p.m.). When asked about his previous asylum by name he says he "has done in my time" (*i.e.*, has heard of it) but has never been there. When again asked his age he repeats "26" and also repeats that he has not had his dinner when the question is again asked him. He does not deny intemperance. He is dull and unemotional and appears to suffer neither from illusions nor hallucinations.

Whilst under observation patient was dull, apathetic, uninterested in his surroundings, and unemployed.

*Simple Presenile Dementia of Moderate Grade ; Intemperance ; certified one year.*

CASE 470.—E. B—, female, married, housewife, æt. 53; certified one year. Cause stated to be intemperance. Father committed suicide.

A dull-looking woman, with a very congested face and nose and a greasy skin. Pupils dilated and act sluggishly. Tongue and lips very tremulous. Palate narrow, high behind, and shelves very markedly forwards. Knee-jerks absent. Both plantars brisk and right > left. Radial arteries thickened and tortuous.

Patient is feeble and dull, and is hardly able to give any account of herself. She gives her name, but in a shaky voice, and when asked her age says, "I couldn't tell you exactly my age." She does not know where she is or where she has come from. She owns that she has heard the name of the asylum from which she has come, and also that she has been there. She knows neither the day, date, month, nor year, and as far as can be made out has no illusions of identity and no hallucinations. Pain? "Not particular." Married? "Yes." How long? "Don't know." Any children? "No." The only voluntary remark she makes is to the effect that she could sleep well if she could be quiet.

Patient while under observation improved somewhat in general health, but continued dull, listless, apathetic, uninterested in her surroundings, unemployed, and practically lost to time and place.

*Simple Presenile Dementia of Moderate Grade; certified two years; previously insane.*

CASE 471.—H. C—, female, married, housewife, æt. 50; certified two years. Previously certified at the age of 41 years,

A rather dignified-looking woman. Forehead narrows upwards. Palate high. Pupils and knee-jerks normal. Plantars very dull. She is very deaf.

She gives her name and her age as "about 48." She knows where she came from, and when, and where she is. She also gives the month, but does not know the year. She states that she was at her previous asylum two years and three months, and that she "used to work in the kitchen, but was called back," and polished tables, made beds, etc. When asked why she was taken to the asylum, she says that her "head came bad, and I was obliged to be taken there." She remembers nothing about the cause of her detention or of the events preceding it. She has heard people walking about the room and talking at her previous asylum, and is sure that they were women and also *real* women. She is very dull, childish, and apathetic, and it is with difficulty that she can be got to smile.

Whilst under observation she continued dull, apathetic, uninterested in her surroundings, and unemployed, but she was quiet and well-behaved, and caused little or no trouble.

## GROUP I.—PRIMARYLY NEURONIC DEMENTIA.

### CLASS (C).

#### *Mature or "Adult" Dementia.*

##### *(Dementia of Maturity.)*

In this class are included sixty cases which exhibit various types of symptomatology. These cases agree, however, in possessing the two necessary characteristics of the class under consideration, namely, (1) an attack of insanity during the period of maturity, and (2) a greater or lesser degree of dementia as its sequela.

From what has already been stated with reference to the classes of "senile" and "presenile" dementia, which contain cases in which involution of the cortical neurones has occurred at a period of life *later* than that at which they were subjected to the greatest degree of "stress," namely, that associated with "mature" activity, it is to be expected that the present class should present important differences from these both as regards immediate etiology and general symptomatology.

In the senile and presenile classes an actual "wearing out"

of the cortical neurones is the primary cause of their involution—which term is perhaps more suitable to these cases than “dissolution”—and the “stress” required to precipitate this retrograde process is therefore in many cases much less than that through which for many years they have passed unharmed. The ensuing dementia is thus on the whole, as has been shown, relatively slow in development and relatively mild in degree, with the single exception of the last class of presenile dementia, in which the additional influence of alcoholic excess has apparently precipitated a more severe grade.

In the cases of the present class, however, the cortical neurones, at the time of breakdown, are being subjected to the “stress” of mature activity. In those examples in which involution occurs under the influence of a degree of “stress” which is equivalent to that constituting the normal environment of the sane adult cerebrum, it is obvious that the durability of the cortical neurones is lower than that present in cases which have survived to the presenile or the senile periods of life. Such cases exhibit relatively little dementia, as will shortly be pointed out, and may be considered to be the analogues of senile and pre-senile cases. In the majority of the cases of the present class, however, involution—which here may, perhaps, be more properly termed “dissolution”—does not occur at maturity under the mere “stress” of normal activity, but requires in addition for its precipitation the presence of extraneous (toxic) factors. Of these the most potent, in the male sex, are intemperance, and, in the female, intemperance and the toxic and metabolic disturbances associated with child-bearing.

In other words, direct toxæmia of the cortical neurones is, during their period of mature or adult activity, an important, and, indeed, almost a necessary, factor in the determination of at any rate the severer grades of dissolution which occur at this period of life.

It is evident from these considerations that a proportionately greater amount of dementia is to be expected in the cases of “mature” than in those of “presenile” and “senile” dementia.

The evidence which has been derived from a study of the cases included in the present class, and which will now be presented in summary, amply supports the above introductory remarks.

Of the sixty cases, twenty-six are males and thirty-four are females. Even a cursory comparison of the clinical notes with those of the cases in the preceding classes shows that the amount of dementia present is greater than in these. Further, the cases can only with difficulty be subdivided into types, and these are of such an entirely artificial nature that any hard and fast line of demarcation is obviously undesirable. Dementia, in fact, in the present class is as prominent a feature as is psychic aberration.

Of the twenty-six male cases, a moderately severe grade of dementia exists in ten, and of the thirty-four female cases, in eighteen; a total of twenty-eight, or nearly one half, of the sixty cases thus exhibit dementia of a moderately severe type.

On the other hand, in the class of "presenile" cases, twenty-one out of sixty-five, or barely one third, suffered from this grade of dementia. As, however, the fourth sub-class of presenile dementia, which includes eight cases of simple dementia with a high percentage of ascertained intemperance, contains no less than six cases of moderately severe dementia, it may, therefore, without impropriety be considered that in fifty-seven examples of the purer types of presenile dementia the grade of dementia was moderately severe in 15 only, or just over one fourth.

There is, therefore, considerably more dementia in the present class than in the presenile.

Though the writer does not propose to divide the present cases into sub-classes which would, owing to the degree of dementia and the consequent obscuration of the symptoms of alienation, be largely artificial, it seems worth while from the aspect of dominant symptomatology (not of special type of case) to introduce the following table:

	M.	F.	Total.
Excitement . . . . .	7	22	29
Depression . . . . .	5	4	9
Unsystematised delusions . . .	12	4	16
Simple dementia . . . . .	2	4	6
	—	—	—
Total . . . . .	26	34	60

Nearly one half of the male cases thus possess unsystematised delusions alone, and more than two thirds of the female cases exhibit excitement. These proportions are naturally



without intrinsic value, but they approximately accord with the general experience of alienists and are, therefore inserted.

The *average age on certification* of the sixty cases is thirty-seven years, being a few months higher in the case of the males and a few months lower in that of the females.

The *average duration of residence* is nine years in the case of the males and ten years in that of the females, and varies in both sexes from one to twenty-eight years.

*Previous attacks.*—No less than eleven of the twenty-six males (42 *per cent.*) had been previously certified, but in five of these there is a history of intemperance and two of the five had been previously certified on three occasions each.

Of the females, only four of the thirty-four cases (12 *per cent.*) had suffered from previous attacks, and in none of these particular cases is there a history of intemperance.

*Social state.*—Of the males 56 *per cent.* and of the females 35 *per cent.* are unmarried.

*Etiological data.*—Certain details bearing on the etiology of the present class of cases will now be summarised. The percentages are, as previously, prepared on the total number of cases, and thus represent ascertained proportions only, as in many of the cases no facts whatever which bear on personal or family history are available. Though these data thus possess merely a relative value, they are useful for comparative purposes, as the relatively gross method by which they were obtained was at any rate a constant one throughout the whole series of cases included in the present paper.

*Ascertained intemperance.*—The percentage of cases with a history of intemperance is thirty-two, and is thus more than double that in the class of presenile cases, which is fourteen.

This exciting cause existed in the case of the males to the extent of 42 *per cent.*, and in the case of the females to that of 24 *per cent.* On classification of the cases from the aspect of dominant symptomatology, the following interesting result is obtained:

	Percentage of intemperance.
Excitement . . . . .	27·6
Depression . . . . .	22·2
Unsystematised delusions . . . . .	25·0
Simple dementia . . . . .	83·3
Total . . . . .	31·6

These percentages may be usefully compared with the lower percentages in the sub-classes of presenile dementia, which are as follows :

	Percentage of intemperance.
Mania with dementia . . . .	10·5
Melancholia with dementia . . .	7·7
Chronic insanity with dementia . .	16·6
Simple dementia . . . .	37·5
Total . . . .	13·8

It will be seen that, whilst a similar relationship exists, the percentage in the fourth line being much the highest, the actual amount of intemperance in the "mature" class is more than double that in the "presenile."

In view of the introductory remarks to this section, this larger proportion of intemperance in the "mature" class, as compared with the "presenile," is at least highly suggestive that alcoholic excess is an important exciting cause of the breakdown of cases of "mature" dementia. It is not suggested that intemperance is the cause of the higher percentage of cases of moderate dementia in the "mature" class, though cases with a history of intemperance, and *in which the dementia is simple*, certainly do more often develop the pro-founder grades.

The "stress" required for the determination of the onset of dissolution of the cortical neurones is necessarily greater in cases of the present class than in the presenile cases, in many of which natural involution is imminent, and therefore a greater degree of dementia, in the "mature" class generally, is *a priori* to be expected.

This observation falls under the general law that the greater the "stress" required to produce dissolution of the cortical neurones, the greater is the amount of this when it occurs. Conversely, in cases which readily break down under "stress," *e.g.*, high-grade amentia, the injury which results is negligible; and in patients whose cerebra possess such a low functional capability (low-grade amentia) that "stress" cannot intervene to any material extent, dementia, except in consequence of senile or "presenile" wearing out of the cortical neurones (or of gross destructive lesions) does not occur.

*Child-bearing.*—In six of the thirty-four females (18 *per*

cent.) the onset of the attack was precipitated by child-bearing, this term being here employed to include all the usual types.

*Syphilis*.—A history or physical evidence of a former attack of syphilis was present in four of the twenty-six male cases (15 *per cent.*), and in all these cases the degree of dementia was mild. This is to be expected, in view of the remarks to be made later in the section on Progressive Dementia, for, in the experience of the writer, a higher grade of dementia is incompatible with a history of syphilitic infection unless the patient suffers either from one of the forms of dementia paralytica (*i.e.*, general paralysis of the insane) or of cerebral syphilis.

*Ascertained heredity of insanity*.—After the remarks inserted under this heading in the section on presenile dementia, it is merely necessary here to state that the percentage of cases with a family history of insanity is twenty-five, being nineteen in the males (*cf.* the greater percentage of ascertained intemperance in this sex) and twenty-nine in the females. It may be added that, as in the case of the previous etiological data, the percentages are made out from the total number of cases, in many of which no facts whatever which deal with personal or family history are available.

The present description will now be completed by a brief reference to the *capacity for work* exhibited by the individuals who compose the class of "mature" dementia.

Of the sixty cases in the class, forty-two were workers, eleven refused to work, and seven were incapable of work. The high proportion of workers is worthy of attention. It is probably due partly to the age of the patients, which is not beyond that of useful activity, and partly to the amount of dementia, which is large enough to curtail the exhibition of the more marked phenomena of mental alienation, and at the same time is not of so severe a grade as to prohibit the performance of useful work.

The proportion of workers is similar in the two sexes. Of the twenty-six males, seventeen were workers (sixteen good and one ordinary), seven refused to work, and two were incapable of work. Of the thirty-four females, twenty-five were workers (eleven good, seven ordinary, and seven poor), four refused to work, and five were incapable of work.

The following fourteen cases have been selected as illustrative examples of the contents of the class under consideration. In the absence of specific sub-classes, the cases are inserted, for convenience of reference, according to their predominant symptomatology, in the order of excitement, depression, unsystematised delusions, and simple dementia.

*Mania ; Mild Dementia ; certified eight years.*

CASE 475.—J. B—, male, married, farm labourer, æt. 47 ; cause, intemperance. Certified eight years, and has shown symptoms since the age of 36.

A dull-looking man, with deep horizontal wrinkles on his forehead and bright eyes. He says "Good-day," and at first refuses to sit down "as I like standing." He gives his name and age, but does not know where he is, although he knows whence he has come. He can state the present day and knows that he came here six days ago. He objects to my "foolish questions," and especially so "on a Sunday" (correct day). He was at his previous asylum about seven years, and at times got tobacco, which was "given to prevent him from cutting up rough, as he was a very refractory patient" (private information). He tells me that he never worked at his last asylum, and "I won't here." He is an "outside man, and would be a lunatic if I worked in lunatic clothes." He complains about the doors being always kept locked. "I don't understand indoors work, and was not brought up to it." . . . "The gentry are keeping me away from work and from earning my living, and want me to work in other people's clothes." . . . "If I stood up and worked in other people's clothes I should lose my life and my wife, and you know it!"

Patient settled down comfortably, and though he was at times troublesome, he was on the whole readily managed and became a good and useful worker.

*Mania ; Moderate Dementia ; certified fifteen years.*

CASE 484.—E. F—, female, married, housewife, æt. 49. Cause, puerperium ; certified fifteen years. Two brothers insane.

A dull-looking woman, with a fatuous smile. Several coarse, horizontal wrinkles on forehead. A small moustache and imperial.

She does not know where she is, or when she came, although she has only been here two days. She knows neither the day nor the month, but remarks that it is summer (correct). She volunteers that her age is 53. She states what asylum she has come from, and says that she was there three years, has been from home ten years, and was 51 years of age when she left home. When I point out that these statements do not agree, she remarks that she thought she was ten years away from home, as it is ten years since she left her husband. She then informs me that she has been married twenty-two years, and that she has had



ten children; also that her youngest child is ten years old this year, and that it was two months old when she was taken to the asylum.

Whilst under observation she was as a rule dull and quiet, and at times she did a little work, but she was often bad-tempered, excitable, quarrelsome, and even impulsive. If not watched she would, apparently without suicidal intent, swallow different articles. On one occasion, for example, she swallowed a bottle of ink, and on another a quantity of washing soda, and she stated, as her reason for doing this, that she was suffering from wind in the stomach. She was a more difficult case to treat than an actively suicidal patient would have been, as her degree of dementia was such as to make it easy, though inexcusable, for her attendants to neglect their instructions.

*Mania; Mild Dementia; certified twenty years.*

CASE 486.—E. H—, female, married, æt. 55; occupation “said to be literary”; certified twenty years.

A dull-looking woman, with a narrow forehead. She gives her name as “Mrs. Alice, Blenheim House, Havelock Road, Hastings, Sussex, in Surrey’s sight.” Age? “I was very little in ’44.” Children? “They haven’t put it in my bill anything of that, sir.” Married? “Not in our way of speaking, sir.” Married? “Not in these directions quite sure, sir; it’s not been entered in any writing” . . . “If they wouldn’t allow the Elizabeth books, the Elizabeth couldn’t settle the Elizabeth’s accounts.” When now asked her name she repeats exactly what she said at first. She then remarks, “If there were four by of Battle, four times two and four of them again, it a very good piece for forty-eight ebonets, fifty dreads the minute nearly, every minute that is run.” Hear people talking? “Yes, sir, very often indeed.” What? “According to the themes.” . . . “Seventy-eight to-day, sir, and ninety of them, twelve by seven apiece and twelve by fifty and twenty-five of them an hour for forty years more,” etc. She speaks rapidly and indistinctly, and almost as if she had pronounced her numerous remarks so repeatedly that she had quite forgotten their proper sound. She, however, *speaks* as if she were talking sense.

Whilst under observation patient was often noisy and quarrelsome, and she talked a good deal to herself. She showed considerable intelligence, and was a useful worker. Her behaviour and remarks often suggested that she had originally been of considerable intelligence and education, and had developed more dementia than a comparison with the ordinary patients would at first suggest.

*Mania, Moderate Dementia; certified seven and a half years.*

CASE 493.—L. C. H—, female, married, housewife, æt. 48; cause, pregnancy; certified seven and a half years, and symptoms for two years previously.

An excited woman, with a narrow, peaked forehead. She gives her name as “Mrs. T. F. H—,” and her age as 40, and adds, “I have six little boys and three little girls.” The youngest of these is just over

6 years old, and the oldest 21. When married? "12th September." She cannot give the year, but says, "We were married by licence at a registry office. We didn't sleep together till next day. That is twenty years ago." She then says that her oldest boy would be 22 years old if alive, and that she was married twelve months before he was born. She cannot appreciate the discrepancies in the above data, and persists that they are true. She knows when, or approximately when, she went to her previous asylum, and adds, "On my oath to prove my true life, and I was bearing my youngest child four months as incense." She gives the exact date of its birth in the asylum.

She tells me correctly how long she has been here, and then rapidly runs on to her personal matters, complaining bitterly that "all the women in the ward here are the cause of me and my husband being apart for seven years." No evidence of hallucinations is obtainable. She remarks, "The man in the surplice, who reads the prayers at H—" (her previous asylum), "kept haunting to my commandments, as if wearing my cloak. I have kept my own commandments. They mocked me, and made my eyes their eyes, and my commandments their commandments, and there was no connection between them," and wanders on rapidly and excitedly in a similar vein.

Whilst under observation patient continued unchanged. She was restless and excitable, and at times quarrelsome, and, though not unwilling, was of very little use as a worker.

*Mania ; Moderate Dementia ; certified fifteen years.*

CASE 495.—M. U—, female, married, housewife, æt. 60. Cause, parturition. Symptoms since the age of 42, and certified fifteen years.

A determined-looking woman with a beard and moustache, and a right hæmatoma auris. She chatters away to herself in a low tone, but at the same time obviously notices what I am doing. She gives her name and states that her age is 50. (Where are you?) "I'm staying here ; they call it all sorts of places." It is "Sebastopol," "Constantinople," also "Zoological," "Mayfield," "the Indies," "Mount Ephraim," and "The Lord's Station Houses." When asked for further names she says "I don't know what else it is at present." She has been here since she "came by the trains." (How long?) "We tabled so many tables since I've been here." She has heard the name of her previous asylum when it is stated to her and has "been there lots of times. I've stayed there also a long time." When again asked her age she gives it as 58. She does not appear to suffer from hallucinations and states that "we all talk of a night."

Four months later she was unchanged on the whole, her mental condition being as follows : She knows neither the day nor the month. She states that she goes to church, but the name of the minister she gives is that of the official at her previous asylum. She does not know the names of the different nurses she sees daily. She hears voices saying "lots of things." She saw something done last night, but she does not know "whether it was a murder or not." Her age is now given as 58. She is nervous and apprehensive, but is neither noisy nor quarrelsome. At times she mutters to herself and makes signs with

her hands. She never writes, but at times she reads odd bits of paper. She is very willing and is a worker of ordinary type. She is fond of sitting over the kitchen fire, but is willing to work and remembers what she has to do day by day and also when she has been told overnight to do anything. She is clean and tidy.

She showed no mental change whilst under observation.

*Melancholia; Moderate Dementia; certified four years.*

CASE 505.—G. K—, male, single, labourer, æt. 41, certified four years. Mother insane.

A vacant-looking man, whose eyes are very close together. He takes no notice of me, and slowly picks his teeth with his nails. When asked, he gives his name, but he says he does not know his age. He knows that he is in an asylum and whence he has come, also the day he came and the present day. He cannot give either the present date, the month, or the year. When asked how long he was in his previous asylum, he replies, "God knows, I don't." He worked on the farm there and received tobacco for doing so. He hears "all sorts of things at nights, the devil sometimes. Worst thing I've done, to come in one of these places. I don't know what he *do* say." When asked why he was taken to his last asylum, he says it was owing to "the harm I have done. I have taken all the goodness in my body away." He then sighs deeply and says, "Dear me, I *was* a silly fool. I see my folly now it's too late." He here becomes extremely depressed. He adds that he has starved many men and women to death. "Silly fool! I didn't know when I was well off. I see it now it's too late."

Whilst under observation patient was unstable and often depressed. He was a willing worker of ordinary capacity.

*Melancholia; Mild Dementia; certified one year.*

CASE 508.—S. T—, female, single, dressmaker, æt. 32. Cause stated to be intemperance; certified one year. Two aunts and a sister insane.

A dull and vacant but somewhat depressed woman. Tongue tremulous. Palate very high and very narrow in front. Knee-jerks absent. Superficial reflexes dull. She gives her name, and states that she was at her previous asylum "about a year, but I do not exactly remember." She came yesterday (correct), and thinks that to-day is Wednesday (Tuesday). She knows neither date, month, nor year, but thinks that it is summer (correct). She states that her age is 32. She was sent to the asylum as she was ill and gave up work. Whilst there she "helped a bit to wash up and wipe." She spent most of her time there "sitting and looking like the rest of 'em." She says that she was depressed when she first went there. She is dull and uninterested in her surroundings, and speaks in a peevish and dissatisfied way. She tends, where possible, to reply in a contrary or contradictory manner. She does not suffer from hallucinations.

Whilst under observation patient showed no sign of mental improve-

ment. She continued dull, listless, peevish, and generally dissatisfied. She did a moderate amount of work, and performed it in a slow, mechanical, and perfunctory manner.

*Unsystematised Delusions ; Mild Dementia ; certified six years.*

CASE 510.—N. A—, male, married, gardener, æt. 48 ; cause, syphilis ; certified six years, and showed symptoms for no less than ten years previously. Father intemperate.

An excitable and wide-awake man of considerable intelligence. He knows where he is, where he came from and when he came here, and also knew beforehand where he was coming. He knows the day and the approximate date, and, after thinking a time, tells me the year. He knows how long he was in his previous asylum. He gives his age as 45. He has been married twice. By his first wife he had two children, a boy now eighteen years of age, and one who died. He had had no children by his second wife.

His pupils are equal and do not react to light. Tongue tremulous. Palate very high. Knee-jerks brisk. Superficial reflexes normal. Left inguinal hernia. Testicles large. No visible scar on penis. Arteries tortuous and very rigid. Patient states that he had a "chancere a lot of years ago and about four runnings during eight years in the merchant service."

He worked in the garden during his last four years at his previous asylum, and was only in three wards during his residence there. He hears voices from the "orb" in the air. They are "chiefly sounds, and what they say depends on what they want to say." When asked if they tell him to do things, he becomes excitable and speaks so rapidly as almost to be unintelligible. "We don't take their orders from the orb. We don't belong to B— but to the town of H—," etc. When asked why he says "we," he replies that there were several men in his previous asylum waiting for their discharge, "who used to hear the orb," and that "it seems more natural-like to say 'we' than 'I.'" They are in this asylum to "take up our discharge as well as signed for discharge," and at the previous asylum they were "there as discharged patients, but couldn't get out. We knew we were discharged from the doctors, and the attendants were much chastised and prosecuted for keeping us in," etc.

Whilst under observation patient was excitable, and quarrelsome if provoked, and was very garrulous on the subject of the "orb." He was a good and useful worker, but was distinctly feeble-minded and childish, in spite of his generally excellent memory.

*Note.*—As will be pointed out later under Progressive and Secondary Dementia, this case, in the opinion of the writer, has avoided the onset of dementia paralytica owing to the possession of neurones of average durability. Such cases as the present, who have previously suffered from syphilis, either develop little or no dementia, or become examples of dementia paralytica. In the experience of the writer, therefore, previous syphilis in either a sane or an insane individual whose neurones are of normal durability does not cause either stationary or progressive dementia. In all cases, however, in which



the durability of the cortical neurones is deficient, previous syphilis results in one or other of the numerous types of dementia paralytica, a *progressive* dementia.

*Unsystematised Delusions ; Moderate Dementia ; certified eleven years.*

CASE 514.—R. W. A—, male, æt. (?) 45. Cause, intemperance. Certified eleven years, and also a year earlier at the age of (?) 33.

A man of hypochondriacal appearance, who knows where he is, where he has come from, and the day he came. He also knows the month and the year, but he does not know the present day although he has only been here five days. "I was reading a paper yesterday, but forgot to look at the date." He states that he is single and that he is 46 years of age on October 29th next. He exhibits much mental apathy, but when he has got worked up to it he talks rapidly and minutely, and also as far as is known fairly accurately, regarding his history and previous whereabouts. He states approximately the number of years he lived in the different asylums to and from which he was transferred, and remarks that the cause of his original incarceration was "a mere nothing, a bit of drink and no serious offence." When his present troubles are discussed he informs me that "the cushion I lie on at night plunges and makes my head sore." He cannot recollect any words, but he says that he certainly hears people talking to him. The "cushion comes on and off. It can leave off and go on at times as if it were alive itself." It is "only the cushion" at night and not his bed-clothes, and it has appeared in any bed in which he has slept. It never troubles him during the day, nor does any similar thing. He remembers that when asked the other day by the Superintendent about voices he denied them, and remarks "I did not think of the cushion from that point of view." In different asylums he has slept both in side-rooms and dormitories, and in each bed he was troubled by the "cushion."

Whilst under observation patient continued mentally unchanged. He was often noisy at night, but was, as a rule, quiet during the day. He was able but unwilling to work.

*Unsystematised Delusions ; Mild Dementia ; certified eleven years.*

CASE 521.—J. S—, male, married, carpenter, æt. 52 ; certified eleven years, and has shown symptoms since the age of 38.

A dull man, of phlegmatic appearance. He gives his name, and states his age to be 50 or 51. He knows when he came, whence he has come, and where he is. To-day is "Monday or Tuesday—I forget. Which is it?" (Tuesday). He was at his previous asylum "nine, ten, or eleven years." He did not do much work, but "I was busy with the Supreme, that was like God, Him being with us." When he got to his previous asylum, "I found I was with the Supreme, and then found I had worked up to this before when I married," etc. . . . "I wasn't sure if the wife married me for it, or if I married her for it." Have you been "with the Supreme" all these years? "Must have been, for I

haven't joined or met any of my parts for understanding." Have you heard "the Supreme"? "Yes, He's been busy with the understanding all the time. That was in my happiest time with the Supreme when I used to get a few understandings and feelings that with me, or me with that, or through me, or in me. I knew I was with it if I went out for a walk, but not so much as if I was in the asylum."

Whilst under observation patient remained mentally unchanged. He was always ready to talk about "the Supreme," and used this idea as his excuse for refusing to do any work at all. He was quiet and well-behaved if left alone.

*Unsystematised Delusions (?) ; Mild Dementia ; certified nine years.*

CASE 524.—M. T—, female, married, housewife, æt. 48. Her present illness commenced as melancholia during pregnancy, and she has been certified nine years.

A healthy-looking woman, with a low forehead and a wide-awake appearance as regards the eyes. Palate high, and narrow in front. Marked corns on both knees. She gives her name, and her age as 49. When, from her watchful appearance, she is asked about hallucinations, she says that she has "not heard voices for months." She then remarks that she used to think that she heard people swearing at her, but "it was only fancies, and was people in the ward." She is obviously here trying to hide something from me, as she remarks, "I used to try not to hear them, and not to tell the doctor, and I used to try hard to get home, but I am not at home yet. I worked very hard in that asylum." She did ward-work there and also some needlework. She used to help another patient, for whom she appears to have great respect, if not awe, to do the latter. She can give the day, and the date within a day, and she knows how long she was incarcerated in her previous asylum. "My husband put me in the asylum, as I tried to drown myself—I don't know what for. I had a baby three months after going there, and it died."

Whilst under observation she was simple-minded, childish, facile, and easily led, and was an excellent worker. She was, however, easily upset by injudicious treatment or environment, and at times, owing to her hallucinations being particularly obtrusive, was suspicious and secretive.

*Mild Dementia ; certified seven years.*

CASE 526.—W. H—, male, married, miller, æt. 47 ; cause, intemperance ; certified seven years.

A quiet and well-behaved man, of rather dull appearance. Pupils normal. Plantars dull. Knee-jerks practically absent. A marked band of dilated venules round the chest at the diaphragm-line. Arteries tortuous and somewhat thickened.

Patient has a fairly good memory, and gives all the usual details readily and accurately. He worked in the scullery for several years in his previous asylum. Till two years ago he received beer and tobacco for his work. After that date the beer was stopped, and then he got

more tobacco instead. He shows much mental apathy, but talks sensibly and intelligently. His recent memory is better than his remote, but both are fairly good. Before admission he admits having drank a good deal of both beer and spirits. His wife has not seen him for years, and he does not know where she or the ten-year-old child is. He never bothers himself about them, as "I was kept pretty well busy from morning to night." He is quite comfortable, and doesn't seem to have either thought or "bothered" about getting his discharge.

Whilst under observation he was feeble-minded, and showed great mental apathy and lack of initiative, but he was a willing and useful mechanical worker. He was sent out to the workhouse at the request of the guardians.

*Moderate Dementia ; certified eleven years ; three previous attacks.*

CASE 527.—W. R. B—, male, married, grocer and gardener's labourer, æt. 47 ; cause, intemperance ; certified eleven years and previously, with very short intervals, at the ages of 32, 33-34, and 35-36. Mother insane.

A stout man, with an expressionless face. Ears without lobules. Right knee-jerk just present, left absent. Pupils react normally.

Patient comes up to me with a fatuous smile and shakes hands. He informs me that he came here a "little more than a month ago" (two days). The day is Wednesday (Saturday). He then remarks, "I've been bucking up with another brother." . . . "The last rice we packed up wasn't so good." Work? "I can drive, good drive, steady reins." Anything else? "Sleep. I can sleep." . . . "I've come all the way. A good many in the Albert Edward, they say. I was off my beer and lots of things." What is this place? "Thornton Heath." . . . "I've always heard it highly spoken of—madhouse." Why were you brought here? "Fast wife." He says he has been married nine years, and has "just about" two children. He hears people talking to him "all day, Sunday, Monday, and Tuesday when I came out on the round. They said 'coffee' . . . Bar going out of business on my round." He does not hear them "quite so bad" at night. He has not drank so much, but he has "looked after a drink place." He can tell the time of day to within an hour. When again asked the day he now says "Thursday." He has been in this asylum "five years with the major. Hack mare won several plates on this county." When asked who sent him to the asylum he replies that "Mamma put me here. She thinks a good deal of making a slight change in the family."

Whilst under observation patient continued mentally unchanged, and was a good and useful worker and quiet and well-behaved.

*Confusion ; Moderate Dementia ; certified one year.*

CASE 531.—J. A. N—, female, single, dressmaker, æt. 38. Cause stated to be intemperance ; certified one year. Mother died in a fit.

A dull-looking woman, who tells me that she is called by several names, "but my right name is J. A. N—." People call her "Jerusalem," "old lady," "or just what they think" . . . "I suppose they call it for fun." Who do? "Anyone." When? "Always during the day, but not so much since I've been in this house." She then asks if this house is M—r Buildings. Are you married? "I think I'm meant to be married, as they sent several rings to the last house for me." The name of that place was H—, but "I don't remember going into that one." She does not know how long she was there, but "it seemed summer all the time, so it couldn't have been so wonderfully long." She knows neither the day nor the month, but can state the year. She gives her age correctly, and says that she had a child when between 20 and 21 years of age. When asked who the nurse is, she says, "I seem to know her face," and asks, "Is it Mrs. Wilson?"

Whilst under observation she showed no sign of mental improvement, but became less actively confused and more dull. She persistently refused to work.

*On the Formation of Character: an Address to the Nursing Staff at the Retreat, York, delivered November 1st, 1906.* By WILLIAM BEVAN-LEWIS, M.Sc., (University of Leeds), L.R.C.P.(Lond.), M.R.C.S.(Eng.), Medical Superintendent and Director of the West Riding Asylum, Wakefield, and Lecturer and Examiner in Mental Diseases to the University of Leeds.

WHEN a few months since I was asked by Dr. Bedford Pierce to address the nursing staff of this time-honoured institution it was a moot point in my mind whether I should take as my thesis some general subject connected with the history and profession of nursing or direct my remarks to you in a more personal appeal than so general a theme would permit.

I might have taken as my text:

(a) The present position of the nursing profession in the hospitals and asylums of Great Britain.

(b) The history of the several organisations of nursing, and the work accomplished by them.

(c) The aims and special features of mental nursing in particular.

(d) Or, lastly, the proposed legislation which has been set on foot for securing for this profession certain desirable ends.



I decided to ignore all these subjects and endeavour to get nearer to each and all of you by a very personal consideration ; and if at times I appear *too personal* I at least have the plea to present that I have for this profession so profound a respect, I may say affection, that after thirty years' work amongst some two hundred nurses and attendants at Wakefield Asylum I am convinced that no question can appeal more to you all than the one I have chosen for this occasion.

The formation of the nurse's character is my theme, her moral as distinguished from her intellectual development. Character above all things is essential to her success in life, to her real and lasting happiness, and is the one thing needful upon which she may rejoice in the absence of wealth, fame, talent, and social position in the usual acceptation of those terms.

The word "character" comes from a Greek root signifying to cut down into, to engrave deeply, and denotes, therefore, the permanent elements which have been engraven into a man's soul by the stress of circumstances and experiences.

"Character," says one, "is nature in the highest form. It is of no use to ape it or to contend with it. Somewhat is possible of resistance, and of persistence, and of creation, to this power, which will foil all emulation. Men of character are the conscience of the society to which they belong." Now, these are strong terms to use, and the attainment of character is a very lofty ambition ; but for all that, remember it is open to all alike, whether gifted or not from an intellectual point of view, to aspire to and acquire this richest of all prizes that life can bestow—the sanctity of character.

I must, however, first congratulate you on the good taste exhibited by all in the choice you have made of a professional career. There is, indeed, no profession so noble in its aspirations, so unselfish in its aims, so truly social in its pursuits, and so replete with opportunities for making life beautiful as that of nursing. Each sphere of life, of course, has its heroes—men and women large of soul. Sailors, soldiers, legislators, historians, poets, philosophers, scientific worthies, and divines afford us examples of illustrious lives and noble thought ; but I doubt much if any profession can present us with so many genuine heroes whose lives, although not emblazoned upon the world's records, are more deeply engraven upon the hearts and memories

of humanity, more silently yet more sacredly cherished, than the heroes of the nursing profession. Nor is the reason for this far to seek, for of all occupations it pre-eminently is distinguished by the most human of all traits, self-sacrifice. The nurse of all others can enter the holy of holies of the human soul, and in the most sacred of moments communicate that comfort which poor humanity then so truly depends upon.

Often when I see before me a body of men and women devoted to this great vocation of nursing, as I do on the present occasion, I ask myself the questions: "Do they in any way adequately realise the lofty nature of their vocation? Do their hearts thrill at times at the conception of the mission to which they have been called? Do they recall the wondrous examples which have preceded them in this career and the mighty power which can be wielded by them for the good of their fellow-creatures? And if they do, do they regard it as a sacred trust confided to them, to be treasured with due humility, and not to arouse in their breasts over-weening self-confidence?"

Specially applicable are these remarks to you nurses of the York Retreat, trained as you are at an institution which was the first in Great Britain to grapple with the inhuman methods of treating the insane once so prevalent, trained at an institution the fame of which has been rendered immortal by the illustrious work of William Tuke and his noble band of coadjutors and successors, and who have now to sustain by your energy, devotion, and loyalty the reputation of an institution which dates back to 1796.

You are all aware that of late years the education of the nurse has undergone a wondrous transformation, and that a far greater *intellectual element* has entered into her training and pursuits. Formerly there were few demands made upon the nurse's intellectual efforts; gentleness, patience, forbearance, a ready eye for observation, a ready hand and will to help and relieve, were the chief requirements of our nurse. Her knowledge of the human frame and its economy, her acquaintance with diseased processes, and the *rationale* of our methods of controlling these, were of an infinitely crude description. Now she is trained in elementary anatomy and physiology, is supposed to have a fairly clear notion of healthy organic processes, and to recognise the early signs of departure from the normal state; she is required to gauge the temperature by the ther-

mometer, to record pulse and respiration, to attend to all that concerns the hygiene of the patient and his surroundings, the care and distribution of dietary and medicines, to aid the physician or surgeon in multiform ways, and to be ready and expert on occasions of sudden emergency which are sure to arise.

Now, with the advent of a more intellectual element into her life by this scholastic training, the nurse is exposed to a new danger which may seriously interfere with her usefulness. The old adage "A little learning is a dangerous thing" is as true now as it ever was, and is most appropriate to the nurse at this period of her career. She is apt to attach too much importance to acquirements which must be of a very elementary nature, and she therefore tends to appraise her attainments at too high a value. Thus it is that you meet with examples in hospital and asylum life where the nurse, instead of being the modest handmaid of science, becomes obtrusive in her desire to exhibit her knowledge, worries and distracts the physician by her constant attempt to note facts which, although quite relevant to the case, will probably be taken in at a glance of the eye of an experienced practitioner. This tendency to fussy prattling at once stamps its possessor and places her at a great disadvantage when contrasted with the calm, self-controlled, silent behaviour of the accomplished nurse, who is ever ready to afford information when questioned by the doctor. The great William Penn used to say "Have a care, therefore, where there is more sail than ballast." The typical nurse knows full well that knowledge of this kind is not to be valued *for its own sake*, or for the glorification of its possessor, but rather for its *application to the wants* of suffering humanity, and thus without a word amiss she goes silently about her work, ever watchful, ever observant, ever ready when asked why this or the other thing is done to give a rational explanation, and winning thus the confidence of both patient and physician.

Modesty, therefore, you will agree with me, in respect to her intellectual attainments, is always to be aimed at by one who would take a high position in the nursing profession. Obtrude not these prized gifts for idle show, to satisfy the pride of the moment, but be ever ready to apply these powers at the appropriate moment to the great advantage of those under

your care. Above all things, cultivate a quiet demeanour and treasure in your hearts the dictum of the truly wise: "Speech is silvern, silence is golden."

The class of nurse required for our large hospitals and asylums should, above all things, embrace the characteristic of a high standard of *moral excellency*. Now, the types of moral excellency, as you are all aware, vary with the age, the country, the occupation, and the sex. The stern stoic virtues of the old Roman, with his disdain for suffering, indifference to death, small value attached to the life of others as well as his own, was a type essential to a great military power destined for the conquest of the world; whereas the humanising effects of art, literature, poesy, are revealed in the amiable virtues of the Greek, whilst the self-sacrificing virtues of Christianity spread further over the pagan nations of Europe as a happy union of the heroic and tender virtues, the highest type of manhood.

There is one picture in these olden times which always seems to remind me of the birth of the true nursing instinct of the present times; it is a charming picture to dwell upon. At a time when Athens was a centre from which art, science, and literature shone with a steady lustre over the whole civilised world, and gave encouragement to the teaching of all religions in her midst, there was to be found one altar in particular, not inscribed to any god, not distinguished by any ceremonial rites, yet thronged by worshippers and revered before all other shrines, an altar to Pity, "the first great assertion," as Lecky informs us, "to mankind of the supreme authority of mercy." With this worship there was naturally spread a deepening sense of the sanctity of human life, the pathos of human suffering, the yearning for its relief, which form, I conceive, the very foundation of the nursing instinct. I have always been fascinated by this great feature of pagan times. Classic lore presents us with no more pathetic feature to dwell upon than this human instinct striving to assert itself against the cruelty, rapacity, and indifference to life of the age. We expect from the nurse in particular the highest development of this sense, a keen sense of the sanctity of human life and a capacity for pity and sympathy with human suffering.

The word "pity" comes from the root *pietas*—pious, *i.e.*, reverence and love for the Deity, indicating how lofty is the sentiment. But sympathy is still more than pity, and indicates



a feeling in common, a co-operation, so that whilst pity may be a *passive* emotion sympathy is by its very nature *active* for the good of the sufferer. For both of these the faculty of imagination must be keen ; the nurse who is devoid of sympathy must learn the unpleasant truth that she is devoid of imagination, that her mental faculties are to this extent blunted and dwarfed.

Young children, as most of you know, show early defect of imaginative vigour by their senseless, purposeless, cruelty towards small animals, or even towards their own kind ; they fail, in fact, to place themselves in the position of the sufferer so as to realise what is endured. When, however, we arrive at man's estate a defect of imagination leading to acts of cruelty, or to defective pity, should warn us that our mental organisation is at fault, and this should be regarded with shamefacedness and sorrow as a defect in one of the loftiest attributes of humanity.

Yet remember, pity is not sufficient. If you properly fill your sphere it must be translated into action. As that great German philosopher Johann Gottlieb Fichte said in 1799, "Not for idle contemplation of thyself, not for brooding over devout sensations ; no, for action art thou here ; thine action, and thine action alone, determines thy worth." And again, he reiterates, "Not merely *to know*, but, according to thy knowledge, *to do* is thy vocation." A nurse devoid of such sympathy should strive to rouse her imagination by placing herself in the position of the sufferer or by mentally placing her mother, father, sister, or anyone most dear to her in similar trouble.

We should all strive to maintain this noblest of our faculties the gentleness begot of pity, and emulate that noble nature which Shakespeare makes Mark Antony attribute to the fallen Brutus :

"His life was gentle ; and the elements  
So mixed in him, that Nature might stand up,  
And say to all the world, 'This was a man.'"

Such gentleness, such pity, is indeed akin to love—I mean to that Divine love for our fellow-men of which an eloquent writer says :

"Not to love is not to live, or it is to live a living death.

The life that goes out in love to all is the life that is full and rich and continually expanding in beauty and in power."

*Discipline or Subordination.*

All of you know what military discipline means at a time of war, how absolute must be the control, the decision, of the leader ; how implicitly his orders must be carried out by his officers ; how united and harmonious must be the co-operation of the several units or bodies of men who constitute the army. You well know that if any one unit or regiment acts upon its own initiative in defiance of orders *because it did not understand such orders* or their import, infinite confusion would result, and, similarly, what chaos would ensue if his men refused to obey a certain manœuvre because they questioned the motive or the discretion of the officer.

Now, in a well-organised nursing staff the same unquestioning obedience must be demanded, an obedience which pertains just as much to the several subordinate officers acting under their chief as to the several individual units of a ward, the nurses and attendants. Your regulations are framed as much for your own development as for the welfare of the institution and its inmates, and, therefore, their dictation must be regarded as final and absolute.

It is not, however, the printed regulations which are so much the subject of question amongst the junior nurses as that unwritten law involving *minor matters* connected with the individual moral conduct, the manner and spirit in which such regulations are carried out, the general tone of discourse, the *esprit de corps*, and the prompt attention to what may seem, perhaps, the trivial duties of the day.

Now, discipline or subordination begins at home, is carried further at school, and prepares us for the real work of life, and those who have been blessed with a good home and wise parents enter the field of nursing far better equipped for subordinating themselves to their superiors and for understanding what discipline means.

If, however, undisciplined minds enter upon this course of training the usual result is that the orders of the superior are subjected to criticism because the motive dictating the order is not understood ; the sister or charge-nurse is regarded as

overbearing when she insists on the letter of the law being carried out; the matter is referred to the chief officer or matron, from whom, of course, no redress can be expected, and the junior, in a discontented spirit, probably throws up her post.

Now let us see wherein the error consists. In the first place, it is not the function of a junior ever to criticise orders given by a superior. In the next place, her position and experience would render her judgment quite inadequate to express an opinion upon such matters in general. It is presumed that all grades of officers in a well-organised institution hold their posts by virtue of merit; in other words, the superior officer is usually of higher intellectual and moral development than her subordinate, and although there may be exceptions to this rule, the subordinate is bound to assume that the judgment of the superior is dictated by a fuller acquaintance with her profession and a keener insight than is the case with the junior; in fact, the higher plane of office to which she has attained is presumptive of a more highly developed mind in that particular sphere, and that she has passed through the developmental stages of her subordinate staff.

Let me ask you, therefore, to remember, when any point of discipline arises which mystifies or worries you, that the old teaching, old as the hills, is, "*the higher mind looks down into and understands the lower, but the lower cannot comprehend the higher.*" It has ever been so. The lower intelligence fails to grasp the meaning and motives of the higher, begins to carp and cavil, to question authority, to nurse bitterness, or resentfully ends in direct insubordination; whilst the higher intelligence looks down with concern and pity on the lower with a perfect comprehension of its difficulties, of the questionings to which it was also itself a subject, and puts down its arms to aid the lower to rise to a higher plane of being.

If you but conceive the constitution of a nursing staff from this point of view, it would end in your respect and devotion to your superiors, in a consciousness of progressive development, and in a refreshing sense of the dignity and charm of a well-disciplined mind, and surely this is worth the getting. Burke, speaking of such disciplined minds, says, "Full of dignity themselves, they respect dignity in all, but they feel it sacred to the unhappy."

Now do not for a moment suppose this to be an easy task;

nothing worth the getting is easy of attainment. Chalmers tells us that "the acts of virtue ripen into habits, and the goodly and permanent result is the formation or establishment of a virtuous character." We know full well that this is a psychological fact. "Every new achievement of principle smooths the way to future achievements of the same kind," renders the struggle less difficult, and virtuous acts become the very habit of our life.

What is it that I have asked you to do?

(a) First, to look into yourself, recognise your own inefficiency, admit your own restricted stage of development—in other words, acquire self-knowledge.

(b) To subordinate your natural inclinations and will to a higher law which you may not understand at the time, but to which you submit *because it is higher*—in other words, self-abnegation, self-sacrifice, a sinking of your own personality in what you feel to be higher than self.

(c) To strive patiently after the higher, an uplifting of your arms to a higher plane of being to which you aspire.

*Self-knowledge.*—A few words upon the virtue of self-knowledge. The Grecian philosophy held as sacred above all truths that dictum which they would have had inscribed upon every temple and deeply engraved upon each heart: "Know thyself." If we all bore this ancient maxim in mind, it would have a most refining influence upon both our natures and actions. To know yourself is to probe deeply into the origin of your motives to action, which is a very difficult task to undertake, yet the truly wise will strive to do so. Now, although you may not be able to pry into and to understand the motives of a higher mind than your own, yet your own motives will, when honestly inquired into, in most cases be revealed.

But there is a very ready way to knowing oneself, and this also philosophy has dictated for us. It has been the treasured guide of some of the greatest intellects who have given their thought seriously to their own moral development, and I, therefore, warmly commend it to your notice.

It is this: Carefully note the judgments you pass upon your fellow-man. Ask yourself what the voice of scandal or slander sometimes prompts you to repeat and even believe; then say bravely to yourself, "These are my own shortcomings, either actually or potentially." Rest assured



that the teachings of philosophy have fully vindicated the truth that what one is ready to suspect his fellow of is just the very fault he himself is likely to be guilty of ; his suspicion is but a *reflection of his own mind*. Do remember this, that the world is what we make it for ourselves ; and just as the artist sees the landscape or other form of beauty with a very different eye from the uncultured eye of the peasant, so the world and your fellow-creatures are coloured by the reflection of the several minds which conceive them.

I am not afraid of wearying you with the enunciation of this great truth ; perhaps I may hope that as students of mental operations this truth will have already been fixed in your minds ; but if not, tell me why yon melancholiac is assured that life is a horror, that all is hopeless and sad, that the former days of happiness have passed for ever away for all.

"Disease," you reply. Yes, but in like manner all healthy states vary in the tone and colouring that they give to the environment, and vastly different are the views of life we severally enjoy. You think, may be, that your companion beside you sees the landscape with the same eye as yourself, that it creates the same feelings and sentiments. You were never more mistaken in your life ; no two of us ever see things or judge people exactly alike.

Therefore, remember the world is what you make it, or, in other words, is a reflection of your own minds. Self-knowledge is acquired by noting your judgments on your fellow-men, your views of life, your motives and principles of action. If your judgments are harsh, if you see chiefly the unlovely in your fellow-man, be assured the unloveliness is in yourself also. Seek to eradicate the evil lurking there, examine the known weaknesses to which you are yourself subject, and ten to one but it is the very lapse you are fond of attributing to those you come in contact with.

Follow this principle out bravely, and honestly attempt to suppress your faults as thus revealed, and reward will certainly come by a view of life and your fellow-creatures greatly to be desired. Suspicion will fade away, better motives will be credited to those around you, and your purer mind will reflect its own nature on all things and make life really beautiful. The acceptance of this principle of self-reflection, by which we acquire that most desirable of all acquisitions, self-knowledge, is

the secret of those eminent lives which have shed such lustre upon the history of ancient and modern times. Above all things will self-knowledge aid you in eradicating from your nature those cancerous pests of institution life, gossip, scandal, suspicion, ill-will, wrong-doing, and envy. Surely this is also worthy of attainment!

The second effort I asked you to make was to subordinate yourself to the higher law *because* you know it to be higher. And here we come to the virtue of self-knowledge. There are proud natures which cannot readily become subservient to other minds, too proud to submit to rules and regulations which they regard as irksome and the import of which they fail to grasp. Now, self-knowledge leads to true humility, and soon begets that reverence for the higher law, that respect for authority as well as that striving after higher things, which renders them above all things dutiful and loyal. Sinking oneself in the higher law, placing oneself loyally at its disposal, is the surest road to advancement and moral excellence.

Self-constraint, the acquiescence in what you know to be right, however unpleasant to you, is demanded of the asylum nurse to a very notable degree. It is here, I think, that the nursing of our asylums shows a lustre which no hospital, so-called, can ever hope to attain to; no comparison, I think, can possibly be drawn between the tests to patience, endurance, and loyalty to which our mental nurses are subjected and those imposed upon her hospital sister. As Emerson truly says, "to measure character we use the resistance of circumstance," and surely no one who has watched for a day the life of a good nurse in our refractory wards would otherwise than maintain that the worries, anxieties, and at times the real tragedies of her life are resistances which tend to bring out the noblest characters in their true light.

This is why I think that a long training is desirable for the formation of a really good nurse, and why I believe that your Superintendent has acted so wisely in requiring of you a four years' course of training—none too long a period for the serious work before you. Such a system can only issue in the weeding out of those undesirable ones who are not prepared to make nursing the one serious business of their life, and upon whom, therefore, nursing lectures, ambulance work, and clinical teaching is so much wasted energy; and in the next place, it

must result in a sound and systematic training which should find you at its termination accomplished nurses, gifted with powers which make you the most valued assets of an institution and of a community. Let me ask you to recall the words of Dr. Bedford Pierce in his last Annual Report of this institution, and which I most cordially endorse: "It is also important to remember that the training of a mental nurse is very different from that in a general hospital, and no nurse can be considered qualified for the difficult duty of nursing the insane without special training; nor, on the other hand, should a nurse with only asylum training be considered a trained hospital nurse." I would only add to this statement my opinion, that the mental nurse requires a far longer period for her course than a hospital nurse, and this because of the large demands made upon her moral culture.

But it is not alone as regards the serious trials I have alluded to that you will require to exercise self-constraint, but in your relationships to your nursing colleagues, your superior officers, and the interests of the institution which, above all others, demands your loyalty.

The patience begot of self-constraint is evidenced by the *invariable gentleness* you have to observe towards your patients, however wearisome they may be, and also by the spirit of *cheerfulness* which you must strive to cultivate amongst all circumstances whilst going about your work. Such cheerfulness is highly infectious, and reflects its influence far and wide upon patient and staff alike. Little do you know, perhaps, you who pursue your work with quiet watchfulness, gentleness, and a constant cheerfulness, how many silent and unsuspected blessings you gain from those around you. There are times, of course, when from fatigue or from physical causes cheerfulness may be hard to assume. On such occasions, if still you succeed in bringing a ray of light into your midst, you may feel assured your growth in self-constraint is progressing.

Were you to ask me what class of nurse shows the most vicious lack of self-constraint I should not reply, as some of you might expect, the hasty or passionate; for the sudden outburst, over, is followed often by a degree of real shame and grief; but I would name above all others the nurse fond of gossip and scandal.

Be assured if you fail in this respect, if you lightly handle

the characters of those around you, if you pass harsh judgments unnecessarily, or take pleasure in dwelling upon or exposing the frailties of others, you are sadly wanting in this great virtue of a true nurse—self-control. Such a nurse is always open to suspicion, for if she be a gossip about her colleagues and their doings, how can she be entrusted with the numerous private matters which a large institution brings before her notice? To prattle to the outside world about her patients and their private histories and doings is as culpable as for a physician to talk too freely about the patients entrusted to his care. Let your self-control, therefore, exclude the possibility of gossip. Learn to respect the necessity for privacy, and gain thereby that self-respect which issues from a consciousness of loyalty.

*Vigilance.*—Just as much as there is a temptation to gossip amongst yourselves, to your own injury and that of others, so there is ever a temptation to a lack of vigilance, evidenced by a dreaming, brooding tendency. This is often seen in undisciplined minds, and the peril of this tendency rests on the fact that few regard it as a fault at all. It has always been their nature to indulge in reverie, to allow the mind to wander aimlessly. Now, this tendency is obviously opposed to the one great merit of a good nurse, the quality of vigilance. Watchfulness is eminently demanded of the *asylum* nurse, and if she permits her dreamy tendency, her castle-building, or her reveries to obtrude themselves when upon duty she will utterly lose this most desirable quality of vigilance, and disasters are sure to ensue.

There is a secret power in genuine love for suffering humanity which necessarily excludes the faults I have delineated; such love should, of course, be quite natural—how rarely this is the case I fear we all see too often. Still, those who try to acquire it in spite of natural tendencies are striving after a higher ideal; nor should they cease their efforts until life and love are one, or, as is so beautifully rendered by England's greatest poet:

“‘Tis even thus:

In that I live I love; because I love  
I live: whate'er is fountain to the one  
Is fountain to the other; and whene'er  
Our God unknits the riddle of the one,  
There is no shade or fold of mystery  
Swathing the other.”



In fact, it is on this *Divine love* for her kind that the secret influence of a good nurse depends. With tenderest insight she sees in the demented and suffering who throng our wards—

“A body journey’ng onward, sick with toil,  
The weight as if of age upon the limbs,  
The grasp of hopeless grief about the heart,  
And all the senses weakened, save in that  
Which long ago they glean’d and garner’d up  
Into the granaries of memory.”

And her heart goes forth with strong love to the afflicted one, whilst her tender watchfulness and care strive—

“To stay his feet from falling, and his spirit  
From bitterness of death.”

Let me now digress for a moment to invite your attention to three ideals of life realising this high type of being, yet separated the one from the other by the bridge of centuries :

During mediæval times, when the thousand years of the so-called Dark Ages brooded as a cloud over continental Europe, two great lights cast their beams athwart the gloom, bringing out the shadows into still darker relief, as though to solace Europe for the decay of learning, which was then at its lowest ebb. The first great luminary appeared just prior to the plunge into mediæval darkness, as though to support with hope those who otherwise would have been given over to absolute despair ; the second near the termination of the Dark Ages, as if to augur the return of the sun of learning in its full lustre.

The first I allude to was that of a noble Roman lady, her work and its momentous results. The woman's name was Fabiola, who as an act of penance founded at Rome the first public hospital that history records ; her example, copied by noble emulation throughout Christian Europe, spread like a flood throughout civilised nations, with the wondrous results you perceive at the present time.

The second great luminary was the Spanish monk Juan Gilberto Joffre, who, tortured by the horror to which wandering outcast lunatics were subjected, built the first asylum for the insane at Valencia in 1409 ; the cities of Saragossa, Seville, Toledo, and Valladolid followed with their respective asylums, and a new era began to dawn, the doctrine of witchcraft and demoniacal possession was doomed, and we stand

here to-day a witness to that sterling human instinct which was aroused by these two wondrous characters.

Coming to our own times, we have a signal instance of noble initiative, with self-sacrificing devotion, displayed by a nurse whose name is a household word in every British home, to remind us what one woman by sheer force of character, and by strength of an exalted love, can accomplish. In October, 1854, Florence Nightingale sailed for Scutari with a staff of seven and thirty devoted nurses to organise nursing of the sick and wounded and to relieve the distress existing amongst the Anglo-French troops during the terrible Crimean campaign. So great was the influence of her self-devotion upon the nation at large, that huge sums of money poured in to establish institutes for nursing and further her great exertions at Scutari ; and thence sprung those noble national brotherhoods termed the Red Cross Service, the St. John Ambulance Association with the numerous affiliated Corps, the medico-psychological nursing classes, and the innumerable nursing guilds throughout the kingdom.

Now, you who have taken your stand amongst others in this great nursing reform, remember that although you cannot all be Florence Nightingales you can all play a noble part in this profession. Brilliant as such achievements are, remember that the noble trend of Christian charity has been in the direction of quiet, unostentatious work, and that the hundreds of thousands who have sacrificed their lives for the relief of suffering humanity have left a record of undying nobility. Do not, I repeat, ignore the *day of little things* ; the most trifling details as they may appear to you are absolutely essential in a nurse's daily work. She must keep her attention continuously upon such little details which insure her patient's happiness and comfort. Securing your patients from unnecessary noise, from surprise, from anxiety, from hurry ; gentleness of handling, quietness of tone, absence of officious interference, the power which foresees the patients' wants, thinking for them ; in fact, the little details connected with their clothing, bedding, bathing, the ventilation and warmth of their rooms, the cheerful encouragement to occupation where allowable, or to amusements when the mind should be diverted from morbid brooding—all these indicate the tact which is of inestimable value in the asylum nurse.

To you charge nurses I would repeat the admirable advice given by Miss Florence Nightingale : "To be 'in charge' is certainly not only to carry out the proper measures yourself but to see that everyone else does so too, to see that no one either wilfully or ignorantly thwarts or prevents such measures. It is neither to do everything yourself nor to appoint a number of people to each duty, but to insure that each does that duty to which he is appointed. This is the meaning which must be attached to the words by (above all) those 'in charge' of sick, whether of numbers or of individuals (and I think it is with individual sick that it is least understood). It is often said that there are few good servants now ; I say there are few good mistresses now. They neither know how to give orders nor how to teach their servants to obey orders—*i.e.*, to obey intelligently, which is the real meaning of all discipline." Miss Nightingale wrote these words in the days of crinolines, and I will save you her remarks upon that terrible development in dress ; you may imagine how she inveighed against the fashion of those days. However, we must warmly agree with her in her horror of rustling clothing, rattling keys, and creaking boards and furniture in the sick-room. Another remark of this great teacher of the nursing art I cannot refrain from repeating :

"Walking on tiptoe, doing anything in the room very slowly, are injurious (*i.e.*, in the sick room). A firm, light, quick step, a steady, quick hand are the desiderata, not the slow, lingering, shuffling foot, the timid, uncertain touch. Slowness is not gentleness, though it is often mistaken for such ; quickness, lightness, and gentleness are quite compatible."

A few words on companionships and I have done.

### *Companionships.*

The young nurse joining a large institution for the first time is usually much impressed by the *esprit de corps*—the spirit of apparent unity obvious amongst the numerous members of the staff ; the spirit of comradeship is to her not only very refreshing and novel, but develops within her a healthy enthusiasm.

It is only later that she discovers that this apparent harmony is to a certain extent broken up by a distinct line betwixt those who aim at the prizes of their profession, and who are determined to work out their moral advancement, and the opposing

class, who are devoid of any such instincts or ambitions, or at least careless and indifferent or it may be actively vicious. She will soon learn to discriminate between the two classes and will be drawn to the one or the other by the natural attraction subsisting between similar minds.

Emerson says very truly: "A secret freemasonry runs through all persons of virtuous character; they cannot be hidden from each other—they mutually attract." We may also add that a similar freemasonry runs through those who are by nature vicious; and do what she will, the young nurse will find herself constantly tending towards one or the other camp. You are, therefore, called upon very early to make your choice of friends, and I cannot here insist too strongly on the caution you should exercise. Here it is that a wise officer will often turn the tide in a young girl's destiny by advice and timely suggestion on the desirable associates for her subordinates. By a friend I do not mean mere acquaintances whom you necessarily meet with in constant association with the staff, but those one or two with whom you can exchange the most solemn confidences, to whom you can with confidence entrust your every trouble with a certainty of sympathy in return. The distinguished W. Penn says in his quaint style: "Friends are Twins in Soul, they sympathize in everything, and have the Love and Aversion." And again, if you ask me how such a true friend is to be known, the same writer adds: "A true friend unbosoms *freely*, advises *justly*, assists *readily*, adventures *boldly*, takes all *patiently*, defends *courageously*, and continues a friend *unchangeably*." Remember, friends will not hesitate to tell you your faults, will encourage your lapses neither by levity nor leniency, and will equally expect the same openness upon your own part to themselves.

Whichever of you has the stronger mind will influence the weaker. If *you* are the weaker, you will be under the sway of the stronger, whether she be virtuous or vicious; if you are the stronger nature, remember the serious character of the responsibility thus cast upon you. Be, therefore, most guarded in the choice of your intimate friends; and when you have secured such a prize be true as steel to her best interests and—

"This above all,—to thine own self be true;  
And it must follow as the night the day  
Thou canst not then be false to any man."



*On the Localisation of Cerebral Function: a Reply to Dr. Joseph Shaw Bolton.* By ALFRED W. CAMPBELL, M.D.

IN his paper on "Amentia and Dementia" Dr. Bolton has intercalated such a vigorous dissent from some of my speculations on the localisation of cerebral function, and a complaint so bitter of my criticism of some of his earlier researches, that I am forced to offer a defensive response.

The reference to my chapter on the visual areas may be briefly dismissed, because I feel that unprejudiced readers will recognise that to underrate Dr. Bolton's well-known work in this direction was the reverse of my intention, not to mention that it would have been folly on my part to attempt to take unto myself credit to which obviously I had no claim.

Our chief difference concerns the prefrontal cortex. Dr. Bolton gives a direct denial to my statement that this cortex presents a degree of cell- and fibre-poverty greater than that in any other region, and points his denial by casting distrust on my technique.

To open my defence of this statement let me point out that Dr. Bolton has woefully misunderstood and misrepresented my definition of the pre-frontal area. The field to which he alludes, and which corresponds with the loosely-defined prefrontal region, lobe, or area of other authors, differs greatly from the area prefrontalis, mihi; thus, touching its extent on the antero-lateral surface of the hemisphere, that surface in which we are interested, in Dr. Bolton's words the region includes "the anterior two thirds or so of the first and second frontal convolutions . . . and the anterior third or so of the third frontal convolution"; whereas, according to my description, "on the lateral or frontal surface, the field is small, and only takes in the most anterior portion of the middle (second) frontal gyrus."

Considering the sharpness of Dr. Bolton's attack, it is surprising that he has overlooked a territorial discrepancy so great as to confound his two most important surmises.

First, he infers that the area prefrontalis, mihi, embraces Professor Flechsig's nodal point, a hypothetical point whereon the long systems of fibres linking the "anterior association

area" with numerous sensorial zones are thought to impinge. This is incorrect. Unfortunately, I am unable to quote the Leipzig professor verbatim, but I think I am right in stating that he locates this nodal point on the anterior half of the middle frontal convolution; therefore more of it lies without than within the prefrontal area as defined by me.

Secondly, to illustrate the structure of prefrontal cortex, Dr. Bolton has employed sections from the middle of the sulcus fronto-marginalis of Wernicke (inadvertently he calls this the transverse fissure of Wernicke), but this sulcus also lies partly without and partly within the area prefrontalis, mihi, and at its middle I have often found, and would expect again to find, cortex having what I regard as a combination of "frontal" and "prefrontal" characters, not true and typical prefrontal cortex.

The way leads now to a reply to Dr. Bolton's condemnation of the method for displaying nerve-fibres, that elaborated by Walters and Kulschitzky, which I have employed. It is urged that in using this method I have relied on an untrustworthy support. But I would inform Dr. Bolton and my readers that in the excellent microphotographs reproduced to illustrate his condemnation I recognise appearances with which I am perfectly familiar from an inspection of my own sections; indeed, these reproductions, instead of shaking, actually strengthen my faith in the utility and reliability of the method he despises. My sole regret is that Dr. Bolton has not aided my contention, and confirmed, not only my observations but those of one more learned in the fibre framework of the cortex than myself, Kaes,<sup>(1)</sup> of Hamburg, by offering for comparison reproductions of views of cortex from other parts.

Here I must note that in the addendum to a recent and important paper on the structure of the olfactory lobe and cornu ammonis (*Brain*, No. 113, 1906) Dr. Turner states that the minute intercellular fibrils which he has succeeded in displaying by a specific method elaborated by himself are probably more numerous in the prefrontal cortex than in any other. The statement appears to support Dr. Bolton's point. I understand, however, that these fibrils are different from the finest fibres which any modification of the Weigert-Pal method will demonstrate. And much as I welcome Dr. Turner's discovery and the objection founded thereon to my speculation regarding the function of the prefrontal area, I think he

cede that more investigation will be needed before it is what part these fibrils play in cerebral function. er, considering the wealth of the fibrillar plexus, revealed by other specific methods in other regions, we may be pardoned for requesting more proof that these fibrils occur in greater abundance in the prefrontal cortex than elsewhere; besides, there is no exact statement as to what prefrontal part the observation refers.

In regard to nerve-cells, also, Dr. Bolton's description and representation of the lamination fail to alter my original impression.

Therefore, I adhere to the conviction that the appearance presented by sections of cortex stained by the Weigert-Pal method, or any modification thereof, and by the method of Nissl, suggest that the area prefrontalis, mihi, is in comparison with the cortex of other areas poorly supplied with nerve-fibres and nerve-cells. Also, I will continue to maintain that, in the process of cerebral wasting, on account of architectural frailty, this part and others similarly constructed will show gross changes earlier than others more substantially built. This was the crucial point in my criticism of Dr. Bolton's assumptions, and, in my opinion, it still carries weight.

Finally, referring to function, I repeat that in forming a low estimate of the value of this particular field I have been influenced, not so much by histological findings, as by the observations of workers in other departments. Specially I have felt the difficulty of reconciling high function with the following data: In several well-authenticated cases of isolated prefrontal lesion in the human brain no intellectual change has been apparent; in the case of animals lower than man some competent observers have failed to observe any effect as a result of experimental ablation of the homologous part; and, lastly, in the anthropoid ape the anterior end of the frontal lobe is the only part of the brain which yields no reaction to electrical stimulation, a point which, in these animals at any rate, suggests imperfect anatomical associations.

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(1) Discussing the degrees of fibre endowment of different cortical regions, Kaes writes: "Als faserärmster Bezirk muss die ganze vorderste Stirne auf der Convexität bezeichnet werden" (*Archiv für Psychiatrie*, Band xxv, Heft 3, p. 757).

## Recent Medico-Legal Cases.

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REPORTED BY DR. MERCIER.

[The Editors request that members will oblige by sending full newspaper reports of all cases of interest as published by the local press at the time of the assizes.]

For this very interesting account I am indebted to Dr. Sheldon.

### REX *v.* TUNNICLIFFE.

TRIED at the Chester Assizes on Wednesday, July 18th, 1906, before Mr. Justice Sutton.

The prisoner was employed as a journeyman painter by Mr. S. Whittaker, who had entered into a contract with the Committee of Visitors of the Cheshire County Lunatic Asylum at Parkside, Macclesfield, for the painting of the interior of a new infirmary annexe to the asylum. The prisoner was charged under the Criminal Law Amendment Act, 1885, s. 5 (2) for carnally knowing or attempting to have carnal knowledge, on March 23rd and 26th, 1906, of Mary Ann Allcock, a female patient in the said Asylum. He was also charged with the same offence under the Lunacy Act, 1890, ss. 324 and 325.

Mr. Justice Sutton expressed his opinion that Section 324 of the Lunacy Act, 1890, did not apply to this case, and Counsel for the prosecution did not argue the point. Under the Criminal Law Amendment Act, s. 5, the Judge put two questions to the jury: First, "Did the prisoner carnally know or attempt to have carnal knowledge of the patient?" and the jury found that he had attempted to have carnal knowledge of her. The second question was, "Did he, when he did this, know that she was an imbecile?" and the jury found that he did not know this. The verdict of the jury was, therefore, that the prisoner had committed the offence (that is, the attempt), not knowing at the time that the patient was an "imbecile," and the Judge said that was a verdict of "Not guilty," and directed prisoner to be acquitted. The prisoner gave evidence on his own behalf, and admitted that he knew the woman Allcock was an inmate of the asylum, and that she was at the time of the offence wearing the usual asylum dress; also that he knew "she was a bit wrong."



The case turned to some extent upon the technical point, "What was an imbecile?" Dr. McConaghey, the Senior Assistant Medical Officer of the Parkside Asylum, stated in his evidence that the difference between an imbecile and a lunatic was that an imbecile was a person born with a congenital mental defect, whereas a lunatic was a person with ordinary mental capacity which deteriorated. It is understood that the above is the view generally taken by the medical profession of the difference between an imbecile and a lunatic. It would, however, appear from the case of *Reg. v. Shaw* (L.R. 1, C.C. 145) that the Court of Criminal Appeal in that case held that imbecility might arise from "decay of the faculties through old age or intemperance," and that such imbecility would constitute the patient a person of unsound mind, and consequently a lunatic within the meaning of Section 90, which deals with orders for inquisitions in lunacy.

The effect of this remarkable decision appears to be that under the Criminal Law Amendment Act 1885, s. 5, in order to secure a conviction it has to be proved that the prisoner has knowledge which he could not have unless he is able to discriminate between different sorts of insanity in a patient confined in an asylum. If this is so, then Section 5 is no protection whatever either to inmates of an asylum or to idiots or imbeciles outside. The difficulty, no doubt, arises through the Lunacy Act using the word "lunatic," and the Criminal Law Amendment Act using the words "idiot or imbecile."

Under Section 324 of the Lunacy Act, 1890, the words are "or other person employed in any institution for lunatics." It does not say "employed by the committee" and the only argument, it seems, in favour of the Judge's decision is the doctrine that, where there is a previous description of any particular person or persons, then the general words following are limited to persons *ejusdem generis*. The special persons mentioned in Section 324 are "manager, officer, nurse, or attendant." On the other hand, however, there was no doubt that the prisoner was "a person employed in the Parkside Asylum." The above special words do not include "servants" as Section 323 does, or artisans, both of whom must occasionally be employed in the female wards.

It was suggested to Mr. Justice Sutton by the counsel for the prosecution that the case should go to the jury, and that his

lordship should state a case for argument before the Court of Criminal Appeal, where the legal points in question could have been fully discussed, but this suggestion was not adopted by Mr. Justice Sutton.

A great miscarriage of justice appears to have occurred in the above case, and if this is to be prevented in the future and due protection given to lunatics, idiots, and imbeciles, whether inside or outside an asylum, it appears necessary that the law should be made more explicit. With regard to lunatics, idiots, or imbeciles confined in asylums, if Section 324 of the Lunacy Act, 1890, does not cover a casual workman in an asylum not directly employed by the Committee, the section should be so amended as to cover this without having recourse to the Criminal Law Amendment Act, 1885. The words in Section 324 are "manager, officer, nurse, attendant, or other person," etc., and it should be made clear by the insertion of other words that this section applies to artisans, servants, and also to persons employed in or about the asylum by firms or individuals who have undertaken work for the Committee by contract or otherwise. The amendment might be brought about by a section defining what class of persons the words "or other person" in Section 324 include.

It is found necessary at times to get work such as painting, installation of electric light apparatus, etc., done by outside contractors rather than by the regular artisans at an asylum, and on these occasions it is impossible to prevent the workmen employed by such contractors from entering from time to time the asylum female wards.

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CRIMINAL LAW AMENDMENT ACT, 1885, s. 5 (2); OFFENCE AGAINST IMBECILE WOMAN; DEFINITION OF "IMBECILITY."

At Bodmin Assizes, before Mr. Justice Kennedy, a man was indicted for an offence under Section 5 (2) of the Criminal Law Amendment Act in respect of an imbecile woman. It appeared that the imbecile when she was fourteen years of age was in the second standard at school, where the average age of the children was only eight years. At the present time she was not fit to be trusted alone, and was not considered capable of going out to service.

On behalf of the prosecution it was pointed out that there was no definition of the word "imbecile" contained in the Act, and it was submitted that an "imbecile" was a person of defective mental power of less degree than idiocy, and not congenital.

For the defence *R. v. Barratt*, L.R. 2 C.C.R. 81, and *R. v. Fletcher*, L.R. 1 C.C.R. 39 were cited.

His lordship, in the course of his summing up to the jury, said that there had not been many cases under that section of the Act, which had been passed to prevent men, either by a trick or superior will power, from taking advantage of women who, from physical or mental disabilities, had special claims on the law's protection. There were cases where, although a woman had will and understanding, it might be so weak that a man who by persuasion overcame her scruples ought to be held to have broken the law. He cited Taylor's *Medical Jurisprudence* (twelfth edition), pp. 1045 and 1046, and *R. v. Turner*, *Sessions Papers of the Central Criminal Court* (1886), and proceeded to direct them that there must be such weakness that under the will of the man there was no fair chance for the woman. The woman must be incapable of resisting persuasion, of exercising an act of her own will, or of giving or withholding her consent.

He left the following questions to the jury: (1) Was the woman an imbecile? (2) Did the prisoner know it?

The jury answered both the questions in the affirmative, but strongly recommended the prisoner to mercy on account of his age.

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## Occasional Notes.

### *The Lunacy Commission.*

THE extension of the scope of the Royal Commission on the Feeble-minded has unexpectedly brought the desirability of an increase in the strength of the Lunacy Commission under consideration. The Report of a Royal Commission is not soon issued, and its recommendations are not usually acted on with precipitation, so that the hoped-for change may still be far distant.

The necessity for an increase in the Lunacy Commission has been dwelt on in this *Journal* so frequently that nothing more need be said on this head at the present time—the manner of increase is now the vital point. The union of the two offices that now supervise the insane independently would seem to be the readiest means of effecting this in part. The Medical Visitors of the Lord Chancellor if combined with the Lunacy Commission would strengthen the latter both in numbers and influence. The Lunacy Act of 1892 gave the Lord Chancellor power to effect this fusion, and as this provision was passed with the sanction of the then Lord Chancellor, after due consideration, it may be concluded that there is no possible objection on the side of the Chancery. The advantage is obvious. Much of the visiting of the two bodies is a re-duplication of effort. The Visitors and the Commissioners visit the same localities, and often the same patients. The fusion would result in considerable economy in travelling expenses, and would be equal in the saving of time and effort to the work of at least one commissioner.

An increase of pay of the Medical Commissioners is a question which should now receive consideration. Since the salaries of these officials were fixed the pay and emoluments of the Asylum superintendents, from whom the commissioners are usually selected, have greatly increased. Many medical superintendents of a length of service qualifying them to hold such a post would be giving up considerable advantages in pay and prospects of pension in joining the Lunacy Commission. Hence the Commission is deprived of the candidature of many very eligible men, and the knowledge of this does not tend to increase its influence.

The increase of the Commission by the fusion of the two offices would, however, reach but a little way in enabling it to cope with the many duties that it ought to undertake or that ought to be transferred to it.

Deputy commissioners, as in Scotland, would appear to be the simplest and most economical means of increasing the working power of the Commission. There is considerable difference of view in regard to the share of the work that should be taken by the deputies. In Scotland they are largely engaged in the work of supervising the boarding-out system, which, unfortunately, at present is almost non-existent in



England. Their work should probably consist in the supervision of such boarded-out cases as at present exist, and, in fact, relieve the senior commissioners as much as possible of the attention to individual patients, under ordinary conditions leaving them free, at their visits to asylums, to deal with the broad, general means of care and treatment.

The majority of the members of the Medico-Psychological Association probably favour the view that the deputies should be general, but there is much to be advanced in favour of a territorial division of work, so that each deputy should have a special knowledge of the patients in a given area. There are, however, disadvantages in this plan, and the non-territorial system is probably the more desirable.

The deputy commissioners would, no doubt, furnish a large proportion of the senior commissioners in course of time, but this should by no means be the sole avenue to the senior posts.

The Commission thus strengthened would be in a position to deal with many things that it is now too over-burthened to attempt—the boarding-out question, the defect of the present law, the treatment of the incipient insane, and many other important matters which have been too long neglected and which would absorb all the powers of the enlarged Commission.

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#### *The Increase of Temperance.*

The Inland Revenue returns show a steadily progressive decrease in the consumption of beer and spirits in the United Kingdom since 1899; that is in encouraging contrast with the equally steady but more rapid increase up to that date.

The beer consumption in 1899—1900 was 32·2 gallons per head of the population, making a total of 36·5 million barrels, but in 1905—1906 this had fallen to 27·9 gallons per head and to 33·5 million barrels.

The spirit consumption has also fallen each year from 117 gallons per head and a total of 48 million gallons for 1889—1900 to 90 gallons per head and 39·1 million gallons in 1905—1906.

The reduction in the consumption of spirits is very striking, and in addition to the reduction in the total quantity of beer consumed there is to be added the large increase in the proportion of the lighter beers of home and foreign manufacture.

Pauperism, crime, and insanity are so largely attributable to the abuse of alcoholic drinks that the statistics of each should be carefully watched during the next few years for any indication of an improvement. It is, of course, possible that this reduction may be due only to the greater moderation from necessity or improved habits of the middle and upper classes only, although it would appear to be too large to be thus explained.

Abuse of alcohol, in the statistics of the causes of insanity, has fluctuated very little for many years past, so that any distinct diminution would be very significant, and should encourage a still more vigorous crusade in favour of true temperance—the use without abuse of the cup that cheers and may inebriate.

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### *The Grantham Railway Disaster.*

It is agreed that all statistics require careful reading, but those relating to insanity are more exposed to misreading than are most others. The following abuse of statistics is so grotesque that it would not be worth criticism had it not tended to cause unnecessary alarm and mischief.

At the time of the Grantham railway disaster, the cause of which still remains a mystery, the sudden onset of insanity in one of the two engine-men was put forward as a possible solution. On this question the *Standard* newspaper in its issue of September 13th founded a principal-page disquisition, not without help from the outside. It was stated therein that, as 12·7 in every 10,000 engine-men became insane every year, this calling stood very high (seventh) in liability to mental disease; that, as 40 *per cent.* of all admissions were cases of acute mania, so 40 *per cent.* of the engine-men becoming insane might be taken to suffer from acute mania; that every case of acute mania might become insane without any warning whatever. The conclusion drawn from the foregoing statements as applied to an erroneous estimation of the number of engine-men at 40,000 is that 20 engine-men are liable in each year to become insane suddenly and unexpectedly.

As to the relative liability of engine-men to insanity, no doubt the ratio, correctly taken from the Commissioners' last occupation-liability tables, appears to be high in comparison

with the ratios of some other callings. But it must never be taken as an absolute proportion. It was arrived at by comparing the mean of five years' admissions of engine-men into asylums (1896-1900) with the absolute enumeration of the class in the census of 1891, which latter had perforce to do duty as the standard of comparison till a new census was taken. If the actual number of engine-men in 1898 (the centre year of the five) could have been known and applied to the average admission rate of engine-men for these years, then a reasonably accurate proportion could have been struck. It undoubtedly would have been smaller. The same argument of course could be applied to other callings, but the case of the engine-men stands by itself. They numbered 13,000 in 1871, 40,000 in 1891, and 66,000 in 1901. Few, if any, other callings could have shown an increase of 66 *per cent.* in ten years. Assuming the increase to have occurred regularly through the ten years, the engine-men numbered about 58,200 in 1898, and this compared with the average admission rate centring on that year would show a ratio of 8·7 only.

It is surely ingenious to suggest that the general proportion of acute mania cases in all admissions should apply to engine-men, but it is very awkward, for it would entail a certain proportion of the latter at the time of their falling ill being congenitals, with or without epilepsy, epileptics, senile dements, etc.

Further, the quotation of acute mania as forming 40 *per cent.* of all admissions is ridiculously erroneous. This ratio stands for all sorts of mania, acute, chronic, recurrent, etc.

We think that most who have experience will deny anything like a general liability to an attack of insanity coming on without any prodromata recognisable by wife, friends, officials or doctors. It may occur, of course, but so rarely as to be incapable of statistical consideration. In the case of engine-men the infinitesimal risk is probably more than obviated by the close inspection that each man receives when he goes on duty, and also by the constant observation of his mates and superiors, who must always be thinking how their lives and interests are in the hands of the folk on the footplate.

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## Part II.—Reviews.

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*The Sixtieth Report of the English Commissioners in Lunacy.* June, 1906.

The Report of the Lunacy Commissioners still grows in bulk and in evidence of the vast amount of work that is done.

The number of persons certified as insane in England and Wales on January 1st, 1906, was 121,979, being 2150 in excess of the previous year, this being 404 less than the average excess of the last ten years.

The distribution of these patients varied little in the year. The county and borough asylums increased their numbers by 2251 to a total of 89,342, while the licensed houses decreased by 199.

The private patients have increased by 162 during the year, 137 being added to the number of this class in borough and county asylums. The Commissioners mention the fact that in London an asylum patient is classed as private when a part of the cost of maintenance is refunded by the friends. It would be of interest to know whether this arrangement, together with the increased facilities for private treatment in the county and borough asylum annexes, accounted for the rise in the proportion of the private insane since 1899. Prior to that date the private class had shown a gradual diminution.

Attention is drawn to the fact that since 1859 the number of pauper insane in asylums has increased by 441 *per cent.*, whilst the out-door pauper insane have decreased from 18·5 to 5 *per cent.* only of the total insane pauper population. That boarding-out is possible in England and Wales to a very much larger extent than generally exists is shown by the fact that the patients residing with relatives and others number 25 *per cent.* in the Plymouth and over 20 *per cent.* in Norwich boroughs. If boarding-out can be carried to this extent in two boroughs, why can it not be done in the others, especially if a better-arranged system could be brought into action? With a strengthened Commission great progress should be made in this direction.

The statistics of the accumulation of the insane are illustrated by charts based on the tables giving the numbers of the insane known to the Commission since 1859. The table (Appendix F, No. III) shows that the ratio of all admissions per 10,000 of the population had steadily risen to 6·93 in 1902, since when it has fallen each year to 6·33 in 1905. The ratio of first admissions recorded since 1898, when it was 4·92, rose to 5·76 in 1902, and has fallen in each of the succeeding years to 5·21 in 1905. This may only represent a temporary fluctuation, but it is from these statistics of primary admissions alone that any conclusion can be drawn of the actual increase or decrease in the greater or less frequency of the occurrence of insanity. These first admissions still certainly include cases that have been insane for many years prior to admission, and hence do not represent actually, but only approximately, the occurring insanity of a given year. Even with this uncertain element the first admissions will in time give some guidance



in the much debated question of the increase in the occurrence of insanity, but much more statistical analysis should be given to these first admissions than they now receive. It is desirable, for example, that their ages should be given apart from the ages of all admissions, also the forms of mental disorder and the duration of disorder prior to admission. Such information would permit a much more reliable comparison of the admissions in different years than is now possible.

The recovery-rate (Table VIII) given in quinquennial periods since 1873 has fallen, being lower in the period 1898—1902 than in any previous period, *viz.*, 37·58 *per cent.* of recoveries to admissions.

The death-rate has also declined from 10·26 in the first to 8·87 *per cent.* of deaths to daily average number resident in the sixth quinquennium.

A chart showing the relative mortality of the insane to the general population in age-periods is also given, and a map indicating the frequency of heredity in the insanity of various counties. In fact, the Report shows a distinct advance in various ways in the endeavour to make use of the statistics furnished to the Commission.

The average weekly cost of patients in asylums has fallen by  $\frac{2}{5}$  *d.* below that of the previous year, due apparently to provisions and clothing being cheaper, while the farms and gardens have been more productive, these overbalancing the rise in wages.

Numerous alterations and additions to asylums are recorded, and mention is made of the new asylums in course of construction—*viz.*, Essex (second), Colchester, London (tenth), Long Grove, Manchester (second), Barnsley Hall, West Riding Asylum, Starthes Hall, and the Cardiff Borough.

An important return is given of the cost of asylums per head in the various counties and boroughs up to January 1st, 1904, together with the cost of maintenance and other matters of considerable interest for reference.

The casualties recorded during the year include an extraordinary case in which a husband was convicted of murdering his wife at the Horton Asylum, when visiting her.

An outbreak of typhoid fever at the Cambridge Asylum caused sixteen deaths out of a total of sixty-eight cases.

The recurrence of dysentery and the mortality from it receives very careful consideration, with analysis of the statistics given in a separate table (No. XIV, Appendix B), and a diagram which credits the smaller asylums with a larger proportion of dysenteric deaths. As yet little way appears to have been made in the reduction of the disease. Deaths from tuberculosis are dealt with in a similar statistical method.

The rates of payment (including all "extras") for private patients in registered hospitals (excluding Bethlem Hospital and idiot establishments) during the year 1904 are given in a table, which is one of great interest and demands very careful consideration.

St. Luke's Hospital sets a good example to these institutions in maintaining no less than 20·1 *per cent.* of its patients gratuitously, Bethel (Norwich) following with 6·7 *per cent.*, followed by Wonford House with 3·3 *per cent.* The large number of educated persons who need the help of such hospitals, and, being unable to obtain it, have to become

pauper patients, makes it a matter for serious consideration whether much more help for this class cannot be obtained. In all the registered hospitals, excluding St. Luke's, only forty-five patients are maintained gratuitously, although these institutions receive no less than 329 patients paying from three to four guineas per week and 317 paying four guineas per week and upwards. The amount of charity conferred is reminiscent of Falstaff's pennyworth of bread.

This table will enable a careful comparison to be made from year to year of the actual amount of charity conferred, and possibly a more powerful Lunacy Commission may exert some influence on these institutions, to extend their activities to the object of saving a much larger number of persons of the educated classes from becoming paupers. A return of the total number of persons of this kind now in pauper asylums would be most valuable in inciting public effort for the relief of these unfortunates.

The Report on the whole compares favourably with those of preceding years, is of greatly increased value in its statistical aspect, and bears throughout ample evidence that the Commission struggles manfully to discharge its overwhelming duties and responsibilities.

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*The Forty-Eighth Annual Report of the General Board of Commissioners in Lunacy for Scotland, 1906.*

This last Report of the Scottish Commissioners contains many features of interest, particularly the statistics of, and the remarks upon, the increased death-rate from general paralysis of the insane and the prevalence of tuberculosis, in the Scottish asylums.

On January 1st, 1906, there were in Scotland 16,946 registered insane and 504 non-registered insane persons (in criminal department of Perth Prison and in training schools for imbecile children), giving a total of 17,450. Of the registered insane, 2366 were maintained from private sources and 14,580 by parochial rates. These figures show a decrease of private patients by 13 and increase of pauper patients by 176, and hence a total increase of 163 as compared with the previous year.

Of the 504 non-registered insane persons, 51 were maintained at the expense of the State in the department of Perth Prison for the Criminal Insane—an increase by 1 as compared with the previous year—while 453 were in training schools for imbecile children—an increase of 45 as compared with the previous year. Of these 453 imbecile children, 183 were maintained from private sources.

*Increase of insanity in proportion to population.*—For the first time since 1858, the Commissioners are able to state that no increase of the insane has occurred in proportion to the population. While this is a matter for congratulation, we are reminded that, as proved by the last census returns, there is still a large number of persons of unsound mind who do not come under the official cognisance of the General Board, and, further, that there are doubtless many individuals of unsound mind who are not recorded as such in the census returns. The Com-

missioners give an interesting statistical table, commencing with the year 1858, when they had official cognisance of 5769 insane, and ending with the year under review, when there were on the register 16,946—an increase of about 200 *per cent.* During the same period the increase of population was 56 *per cent.* Quinquennial averages show that there has been a steady increase in the number of registered insane in proportion to population in the case of both private and pauper patients, but the increase is much more marked in the pauper class. Further, the increase in the number of pauper insane is particularly striking when viewed in relation to the pauper population. In 1858 the number of pauper insane in every 100,000 of registered paupers was 5980, and the quinquennial averages show a constant increase up till the beginning of 1905, when it was 21,561. On the other hand, there were 2630 registered paupers in every 100,000 of population in the year 1858, while the quinquennial averages exhibit a marked decrease down to 1900, when there was a rise as compared with the previous quinquennial figure, followed again by a fall in the succeeding quinquennial period ending 1905, when the average was 1464 per 100,000. That is to say that during the last half-century there has been an almost constant decrease in the number of registered paupers in proportion to the entire population, while there has been a steady increase in the number of pauper insane in proportion to the pauper population.

*Number of first admissions registered.*—A table is given showing the number of private and pauper patients registered *for the first time* in each year from 1874 and their ratio to the population. The ratio in the case of private patients has fluctuated within narrow limits, and is the same for 1905 as for 1874. In the case of pauper patients the table shows a fairly constant increase in the ratio to population up to 1902, when it reached its maximum of 52.6 to 100,000. Since then it has diminished slightly and for the year 1905 it was 47.9.

*Admissions to establishments during 1905.*—The number of private patients admitted to asylums during 1905 was 545, or 18 less than in the preceding year and 24 less than the average for the quinquennium 1900–1904. The number of pauper patients admitted was 2920, or 171 less than in the preceding year and 88 less than the average for the preceding quinquennium. Transfers are excluded from this calculation.

*Voluntary patients* admitted into asylums during 1905 numbered 96, which is 12 more than the average number for the preceding decennial period. The Commissioners adhere to their opinion that no objection can be raised to the admission of such patients into asylums.

*Discharges of the recovered.*—The details given in this section of the Report are of a very disappointing nature; for in the face of increased knowledge, advanced therapeutic methods, architectural, sanitary, and generally speaking, environmental improvements, there has been a continuous diminution in the number of recoveries during the past twenty-five years, at least amongst the pauper patients, who form the great bulk of the insane population.

The following statement shows the recovery-rate from all establish-

ments during the past twenty-five years among private and pauper patients respectively.

Average of five years.	Recoveries <i>per cent.</i> of admissions, excluding transfers.	
	Private.	Pauper.
1880—1884 . . .	41'0	47'6
1885—1889 . . .	39'0	45'1
1890—1894 . . .	39'3	44'1
1895—1899 . . .	43'0	44'1
1900—1904 . . .	44'3	42'9
1905 . . .	44'8	41'6

It is to be noted that there has been a fairly continuous increase in the percentage of recoveries among the private patients, while the percentage among the pauper patients has steadily diminished from 47'6 to 41'6 in the same period. After due consideration of all the facts of the case, there can be no doubt, however, that the diminution in the recovery-rate is due, not to diminished efficiency in treatment of the patients, but to the larger number of patients of all ages admitted suffering from incurable physical diseases complicated by mental aberration, many of them patients who, in former times, would have been sent to general hospitals or allowed to die at home.

*Discharges of the unrecovered.*—During the year 1905 there were discharged unrecovered 134 private patients, and 438 pauper patients. Of the latter, 358 were discharged by minute of parish council and 25 on expiry of a period of probation. The remarks of the Commissioners seem to urge an extension of the method of liberation on probation for periods not exceeding one year. There can be no doubt that this provision is a very wise one, and it certainly ought to be taken advantage of more frequently. In many cases the fitness of a patient to take care of himself in the outer world is a very doubtful matter, and can only be decided by experiment. Considerations of possible failure ought not to deter the superintendent from giving the patient the benefit of the doubt and making the necessary experiment. One thing is certain—*viz.*, that the wider employment of the probationary system would lead to a larger number of permanent discharges.

*Insane persons in private dwellings.*—On January 1st, 1906, there were 2752 pauper patients living in private dwellings, with the sanction of the Board of Commissioners. This is the largest number of patients living under family care yet recorded, being 48 more than in the preceding year. Of these 976 were boarded with guardians who were relatives, and 1776 with unrelated guardians. Altogether, 325 patients were admitted to the roll of the pauper insane in private dwellings during the year 1905—that is to say, 3 more than the preceding year. Of these, 108 were resident in private dwellings when first reported to the Board, and remained under private care with the sanction of the Commissioners, while 217, or 14 more than the preceding year, were removed from asylums.

In the course of the year 26 were certified sane, 25 were removed from the poor roll by their friends, 24 were removed to asylums, and 102 died, the death rate being 3'7 *per cent.*

One pregnancy was reported during the year, in the case of a con-



genital imbecile, *æ.t.* 29, living under the care of a married sister. It is pointed out that of the ten cases that have occurred during the past ten years, seven were under the care of their nearest relatives, while one was under the care of a woman who had brought her up from childhood, and only two cases occurred among the many young females boarded with strangers.

The Reports of the Deputy Commissioners on the system of family care of the insane, as carried out in Scotland, are interesting, and tend to the conviction that the system is at once beneficial to the patients and economical to the ratepayers.

*Death-rate in establishments.*—The deaths in establishments during 1905 numbered 183 private patients, or 8·2 *per cent.* of total numbers resident (which is 19 more than in 1904, and 15 more than the average for the quinquennium 1900—1904), and 1137 pauper patients or 9·6 *per cent.* (90 more than in 1904, and 123 above the average for the five years 1900—1904). The statistical tables show a tendency to an increased percentage of deaths calculated on the total numbers resident and an increased proportion of deaths taking place within the first year after admission. This is regarded as confirming the view expressed as to the lowered recovery-rate, that physical wrecks are being admitted to the asylum in increasing numbers.

*Deaths from general paralysis of the insane.*—Very particular remarks are made with regard to this matter, which the Commissioners have made a subject of special inquiry. It is clearly shown that the number of deaths from general paralysis in proportion to the admissions has increased continuously during the past twenty-five years. This increase has been more rapid in recent years, and remarkably so in the case of female patients. It is difficult to decide to what extent the increase shown in the tables represents a true increase in the prevalence of the disease. The reviewer is convinced that a few years ago many of the cases now returned as having died from general paralysis would have been described as cases of cerebral softening, disseminated sclerosis, and cerebral paralysis, and the cause of death certified accordingly. This is especially true with regard to general paralysis in female patients, in whom the disease is now diagnosed with greater accuracy and frequency.

*Deaths of patients in whom consumption or other tubercular disease was present either as a principal or a contributing cause.*—This matter also forms the subject of a special Report by the Commissioners. Figures are given showing an average annual number of deaths in which tuberculosis was present per 1000 patients resident, ranging from 35 in the Edinburgh Royal Asylum to 8·7 in the Aberdeen Royal Asylum, 4·1 in the wards for the insane of Old Monkland Poorhouse, and *nil* in the wards for the insane of six other poorhouses. Not only are remarkable differences shown to exist between different asylums as regards the prevalence of tuberculosis, but in individual asylums there is frequently a considerable difference between the male and the female sections in this regard. Again, when the annual average percentage of deaths in which tubercular disease is present in any particular institution is compared with the average percentage of deaths from tuberculosis in the general population of the district served by that institution the result is

always a striking excess on the side of the institution. The Commissioners conclude that the enormously greater prevalence of tuberculosis in certain institutions as contrasted with others is due in great measure to causes which are avoidable, such as overcrowding. The accuracy and the legitimacy of the Commissioners' conclusions are far from being incontestable. There are many points on which further information may reasonably be demanded. One hesitates to believe that the patients in the Scottish institutions live under less hygienic circumstances than in their own houses—at least in the vast majority of cases; yet it would appear from the statistics that the number of patients who acquire tuberculosis whilst resident in asylums is about twice as great as the number affected prior to admission.

*Expenditure for maintenance of pauper patients.*—The salient feature of the financial statement contained in the Report is the fact that for the last dozen of years the gross annual expenditure per patient in district asylums has been steadily increasing. The main rise has occurred under the head "Salaries and Wages," while a decrease has taken place under "Food."

The expenditure in different asylums under the same heads varies considerably, and one is inclined to attribute extravagance to some asylums in certain directions.

The Commissioners' Report for the past year deserves the attention of asylum administrators, who will be amply repaid by a careful study of it.

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*Supplement to the Fifty-fourth Report of the Inspectors of Lunatics on the District, Criminal, and Private Asylums in Ireland; being a Special Report on the alleged Increase of Insanity.*

This "Supplement" is a document which has been waited for with patience—perhaps, more correctly speaking, with impatience, as more than two years have elapsed since the returns asked for from the various district asylums (in February, 1904) upon which this "Supplement" is based were available, and we are already half-way through another census decade before we have been put in a position to form any estimate of the general increase in insanity during the previous one; so that up till the issue of this booklet we have only been conscious of the fact that "we don't know where we are."

At the opening of their Report the inspectors refer to a similar special Report furnished by them in the year 1894 on the alleged increasing prevalence of insanity in Ireland, and recapitulating the conclusions arrived at on that occasion. These are summarised as follows:

(1) That the great increase of insane under care was mainly due to accumulation, and was, so far, an apparent and not a real increase.

(2) That the yearly increase of admissions was drawn, in a considerable proportion of the cases, from the reserve of the unregistered insane existing throughout the country, as shown by the reduction in the number of lunatics and idiots at large, as given in the census returns.

(3) That the annual increase, in face of a shrinking population, of the number of first admissions, including such a large proportion of first attacks of insanity, almost irresistibly pointed to some increase of occurring insanity in particular districts.

These conclusions seem to have been fair deductions from the statistical returns at their disposal, and from the opinions of the superintendents of the various district asylums, although on some points these latter cannot be said to have been quite unanimous. But there is room for difference of opinion on such questions of causation as consanguineous marriages, the abuse of nerve-stimulants, such as alcohol, tea, and tobacco, and the effects of acute agricultural depression.

In the present Report the figures are brought pretty well up to date, the decade 1894-1903 being the period selected for review.

To deal with the census returns first, in the fifty years 1851-1901 the population of Ireland fell from 6,552,385 to 4,458,775, or, in round numbers, 32 *per cent.*, while the number of insane rose from 9,980 to 25,050, or 151 *per cent.*, and the ratio of insane to population from 15.2 to 56.2 per 10,000, a rise of 267 *per cent.*

These figures, alarming as they may well be regarded, must, however, be taken *cum grano salis*. For if the number of insane in the year 1851 had been computed on the same lines as were followed in 1901 it is more than probable that a very much higher figure would have been returned as representing the total number of insane than was actually done. For, fifty years ago comparatively few cases of mental enfeeblement from old age were returned as insane, whereas nowadays these cases form a not inconsiderable proportion of the admissions into asylums. As the inspectors remark later on :

"As an additional factor in swelling the numbers of the insane, it is important to note that the medical recognition of what is considered certifiable insanity has nowadays widely extended. For instance, symptoms which are deemed sufficient evidence of mental disease to warrant a certificate of insanity and a transfer to an asylum are now accepted in cases which in days gone by would not have been regarded as more than evidences of dotage in old people who were cared for at home by relatives as best they could. The mental breakdown of old age is now looked upon as requiring, with other nervous diseases, greater care and supervision, and the admissions of the aged to lunatic asylums have, therefore, in recent times greatly increased."

And in the section dealing with the age classification of the insane it is shown that during the thirty years 1871-1901, while the proportion of insane per 100,000 of population between the ages of twenty and fifty-five increased by 64 *per cent.*, the ratio of those over fifty-five increased by 185 *per cent.*, these figures clearly demonstrating, as urged by the inspectors, that by far the greatest increase in the ratio of the insane to population occurred in the old age period. This element of causation of the "increase of insanity" is one which is not likely to lessen as years roll on—*au contraire*.

If the sister countries are compared with Ireland as regards their insane population, she is found in this respect to maintain an unenviable pre-eminence; for during the same thirty-year period the proportion of insane per 10,000 advanced in England from 30.4 to 40.8, a rise of 34

*per cent.*, in Scotland from 34.0 to 45.4, a rise of 30 *per cent.*, but in Ireland it increased from 30.5 to 56.2, or a rise of over 85 *per cent.*

This startling difference, however, if taken as indicating a much greater prevalence of insanity in Ireland, must be largely discounted, as the difference in death-rate in the respective countries alone will account to a great extent for the higher proportion in Ireland. The death-rate in county and borough asylums in England and Wales averages 10 *per cent.* on the daily average, that in Irish district asylums only 7.5. Low death-rate means a high rate of accumulation, and if the English death-rate were the same as the Irish, the proportion of insane to population in the former country would approximate much more nearly than it does to the Irish ratio. We need not, therefore, conclude from merely statistical evidence that the Irish are a much more insane people than the English, but rather that they keep their insane patients longer with them. The mortality from general paralysis of the insane is four times greater in England than in Ireland, and this disease alone is accountable for the greater part of the higher mortality in England. In the year 1903, but 3.7 *per cent.* of the total number of deaths in Irish asylums was due to this disease, whereas the proportion in English asylums was 15.7. The ratio of deaths from this disease, however, to the general mortality in asylums does not appear to be on the increase, as from a table on page 16 of the Report we learn that in 1899 the proportional mortality in Irish asylums was 4.4, and in England and Wales 17.7 *per cent.*

The number of freshly occurring cases of insanity is the only reliable index of its rate of increase. But even here statistics are more or less elusive, as many cases included among the "first admissions" to asylums are not of fresh occurrence at all, some of them being congenital or chronic cases—*viz.*, persons who in previous years had already been enumerated as insane in workhouses or at large, and are therefore to be looked on as merely transfers from one category, or *locale*, to another. However, with this reservation, the number of first admissions, or more, accurately, the ratio of these to the general population, enables us to form the closest approximate estimate of any methods employed for computing the increase or otherwise of insanity.

Ten years do not count for much in the statistics of insanity; even twenty are too few to give any solid ground for forming a forecast of the future. Still, more legitimate deductions can be derived from the longer than from the shorter period. And if we analyse the figures for the twenty years 1884—1903 inclusive, instead of the ten dealt with by the inspectors, we shall obtain a wider survey of the whole problem. The statistics of district asylums, as the inspectors very properly advise us, deal only with a portion of the insane—"approximately 67 *per cent.* of the total"—but if we compute the increase in insanity on the ratios per 10,000 of population of the first admissions into district and private asylums during the four quinquennia of the period referred to, this will probably bring us as near accuracy as we can hope to reach. Calculating on these lines, it will be found that the average ratios of first admissions per 10,000 of population for the four five-year periods were 4.7, 5.3, 5.8, and 7.0 respectively, which denote a percentage increase in the second quinquennium over that of the first of 12.7, in the third of 9.4,



and in the last of 20·0, from which we are driven to the conclusion that not only has there been a steady increase of freshly occurring insanity during this twenty-year period, but that the rate of increase has been accelerating in latter years, notably during the last five years; but in accepting this estimate the qualifying consideration already adverted to must not be lost sight of—namely, that not all cases noted as first admissions are, properly speaking, cases of freshly occurring insanity; so that things may not be quite as bad as they seem.

A significant fact alluded to by the inspectors when dealing with the ages of the insane in asylums is that the proportion of patients from twenty to fifty years of age fell from 68 *per cent.* of the total in 1890 to 63 *per cent.* in 1903, while the proportion over fifty years of age rose from 26 *per cent.* in 1890 to 33 *per cent.* in 1903. A warrantable inference from this is that as the average age of patients in asylums is likely to show a progressive increase, sooner or later the death-rate will probably increase from mere senility, and so provide one check to accumulation.

We have often urged in these columns the uselessness of the returns regularly made every year as regards the causation of insanity. The mere fact that only one cause has been allowed to be given, whereas in almost every case which undergoes adequate scrutiny there is found to be a plurality of causes, is sufficient to render quite valueless any deductions from these figures. The inspectors have shown that they were alive to this fact in that they requested medical superintendents when furnishing their returns under this heading to enter all the contributory causes in each case. Of course, the value of such returns altogether depends on the conscientiousness with which each case was investigated, and full allowance must be made for any failure in this respect, but in any case the method adopted on this occasion is correct in principle, however short it may fall of being thoroughly carried out in practice. The inspectors summarise the facts as to causation as follows:

“Taking the causes for the entire decade in their relation to the total, it will be seen that heredity heads the list, being about 36 *per cent.* of the total. Alcohol comes next, with an average of 15 *per cent.* of the total. Then anxiety, worry, and shock, and other physical diseases and ailments, each averaging about 14 *per cent.* of the total.” Other less important causes need not here be specified.

Of these causes some appear to be increasing in potency, others decreasing. To compare merely the first and the last years of the decade, as is done in the Supplement, is not the best way of arriving at reliable conclusions, and is sometimes misleading. For instance, the climacteric is stated to have an upward tendency because the percentage of cases in which this was a factor was 1·5 in 1894 and 2·1 in 1903; but if the first and second halves of the period are compared, this cause will be found to have *decreased* by 9·4 *per cent.* in the last quinquennium. Again, alcohol, which only shows 0·8 *per cent.* of an increase if the first and last years alone are taken into account, shows an increase of 10 *per cent.* in the last half of the decade over the first. The question of the amount of increase or decrease as regards the several causes will be made more clear by simply tabulating them as follows:

Cause	Syphilis.	Senility.	Alcohol.	Other physical diseases.	Heredity.
Increase .	33'3	33'0	10'1	3'7	3'2
Cause	Tuberculosis.	Anxiety, worry, etc.	Other toxins.	Climacteric.	Adolescence.
Decrease	20'4	19'7	15'4	9'4	3'5

There is probably hardly any subject so hedged round with difficulties as that of the causation of insanity, there being frequently a very great uncertainty as to whether an alleged factor is really a cause or an effect. Notably is this the case as regards alcohol. On this point the inspectors very properly lay stress in their observations under this heading.

In the sixth paragraph of the summary at the close of the Report the inspectors state their conclusions generally on the subject of causation :

"While the statistics dealing with the exciting causes of insanity do not exhibit any marked variation from those shown in former reports, it cannot be too prominently pointed out that—next to heredity, which is itself in some cases the direct result of alcoholic excess in the progenitor—intemperance in the use of alcohol continues to head the list ; and therefore every effort should be made to promote the cause of temperance throughout the country. The statistics also show that general paralysis of the insane—a disease at one time almost unknown in Ireland—is now increasing in the more populous urban districts. At the same time this disease is still much less prevalent than in other countries and in the rural districts is practically non-existent. This is, perhaps, to a large extent due to the high standard of sexual morality which obtains all over Ireland."

It is to be noted here that while, as stated by the inspectors, general paralysis is on the increase, if the absolute number of cases is alone considered, it is a fact that the relative mortality from this disease has not increased during the ten years under review, the proportion of deaths from this cause to those from all causes having been precisely the same in the first and last half of the decade, *viz.*, 3'7, the corresponding ratio for England and Wales for the last quinquennium being 16'8 *per cent.*

A good deal of space is given in the Report to the subject of emigration. It has long been the fashion to attribute to emigration the great mass of the ills and disabilities from which Ireland suffers, and amongst these the high proportion of insanity which exists there has been given a conspicuous place. The old stock argument is to the effect that by emigration large numbers of its younger and more robust members are removed from the population, thus leaving behind a higher proportion than normal of the more aged and less vigorous class. This, no doubt, is a fact. But how much higher is the proportion? If we take the census year 1901, for which we may count on greater accuracy of figures, the population of Ireland in that year was 4,458,775, and the total number of insane 25,050, which gives a ratio of insane of 56'18 per 10,000 of population. During the same year 39,613 emigrated, and if this number be added to the population we get a total of 4,498,388, which represents the population of Ireland supposing there to have been

no loss from emigration. This new total gives a ratio of insane of 55.68 per 10,000, a difference of 0.5 per 10,000, or, in other words, had there been no emigration the ratio of insane to population would have been reduced by 1 for every 20,000 persons—this, too, on the assumption that none of those who emigrated would have died or become insane during the year. But as regards the latter contingency the inspectors have something to say. From a special return (Appendix I, Table VII) we learn that on December 31st, 1903, there were a total of 1450 “returned emigrants” of Irish birth in Irish asylums and work-houses, of whom 1277 were in the district asylums, being over 7 *per cent.* of the aggregate number resident, of whom 867 had been admitted within five years of their return. This establishes one fact, that it is highly probable that many of the Irish who emigrated would have become insane had they remained at home; for although the sudden and complete change of environment, no doubt, may have acted unfavourably in a certain number of cases, playing the part of “stress” or exciting cause, from what we now know of insanity it is more than probable that in the majority, if not all, of these cases there was an inherent tendency to mental breakdown which, sooner or later, and under any form of stress, would have operated to bring about an attack of insanity.

But here there crops up another sinister fact, a fact which, in the words of the Report, is “of grave portent to the welfare of our race”—*viz.*, that “the ratio of insanity amongst the Irish-born in America throughout the different States is far higher than amongst any of the other foreign-born peoples.” This statement is based on the figures in the volume of the twelfth American Census dealing with insanity, and on articles from the *American Journal of Insanity*, from which the Inspectors extract some striking quotations. From these sources of information it appears that in 1900 only 15.6 *per cent.* of all foreign-born whites in the United States were of Irish birth; but of foreign-born white insane 29.6 were Irish; and this holds good in individual States no less than in the country at large. In a group of nine States which contain the largest number of Irish-born persons, the average percentage of Irish being 18.7, the average percentage of Irish in asylums (1903) was 34.3, or nearly double what it ought to be. In the *American Journal of Insanity* for October, 1903, Dr. Rollin H. Burr writes that as regards Connecticut “the proportion of insane among the Irish is more than double that of any other nationality. . . . In proportion to population the Irish lead all other nationalities in the production of insanity.”

On the authority of the Annual Report of the New York State Commission in Lunacy it is mentioned that almost 3.4 *per cent.* of the Irish-born population became inmates of the State asylums during the sixteen years 1888–1904—that is to say, a proportion of 340 as compared with 56 per 10,000 in the mother country. If this be correct—and there is no reason to doubt the statement—the incidence of insanity in the case of the Irish emigrant must be truly appalling. The vast disproportion between the ratios of sane to insane Irishmen at home and abroad seems to indicate that emigration itself constitutes a powerful form of “stress,” the new environment and conditions of life too often working havoc in

the rather unstable mental economy of the Irish peasantry. The fact is deplorable—an added scrow for our island of tears.

In this *Journal* for January, 1904, Dr. Bannister, in reference to Dr. Burr's article, writes: "It is a little curious that the Irish immigrants to this country should show so large a percentage, being, as they must be, the more active and healthy of the race. We should look for more insanity to be left behind in the old country, where intermarriage and the culling out of the more vigorous would have its effect; but it is a fact that in this country the Irish are notably numerous amongst the asylum population."

The old stock argument previously alluded to as regards the effects of emigration surely here receives its quietus.

With these facts in front of them it is not surprising that the Inspectors find themselves driven to the conclusion that "the Irish branch of the Celtic race is specially predisposed to mental breakdown," of which they refrain from offering any explanation, except that not improbably "the innutritious dietary and other privations of the majority of the population of Ireland must, when acting over many generations, have led to impaired nutrition of the nervous system, and in this way have developed in the race those neuropathic and psychopathic tendencies, which are the precursors of insanity." This view, though speculative at best, may possibly be correct, but something must be set down to the natural temperament of the people, which is decidedly of an impulsive and excitable cast, and often associated with unstable or ill-adjusted mental arrangements, and therefore more likely to break down, and on slighter provocation than is the case with the more cool-blooded and phlegmatic nationalities. In too many instances this natural excitability is aggravated by habits of intemperance, which prevail all too widely amongst the population at large.

In the summation of their opinions as to the causes of the increase of the insane in asylums the views of the inspectors do not differ from those generally accepted by all authorities on the subject. These, briefly stated, are as follows:

- (a) Accumulation.
- (b) The gradual absorption into asylums and workhouses of the unregistered insane.
- (c) The widening of medical opinion as to what constitutes certifiable insanity.
- (d) The greater confidence in the treatment of the insane in asylums.
- (e) Increase in number and accessibility of asylums.
- (f) Greater longevity of the population generally, owing to the progress of sanitation.

(g) Influx of returned emigrants the subjects of mental breakdown.

And to these may be added, in the case of Irish asylums, a peculiar proneness of the Irish branch of the Celtic race to mental disease.

The most cheering piece of intelligence in the Report is contained in the concluding paragraph, immediately before the "Summary," in which the writer says:

"The first admissions into our Irish asylums during the most recent years show, as will be seen in our annual Reports, a progressive and substantial falling off. Whether or not this diminution will continue in



any marked degree we are not in a position to state at all positively; but it seems to us that—while there will remain in the asylums for some years an accumulating number of patients, due to increased longevity—we are reaching, if we have not already reached, the highest curve of the line indicating the annual rate of insanity in this country, apart from any artificial swelling of the numbers by repatriation of persons who have become insane abroad.”

With the hopefulness which inspires this utterance we are, it is needless to say, in heartfelt sympathy. Whether the expectation is of too sanguine a character or not time alone will show.

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*Fifty-fifth Report of the Inspectors of Lunatics on the District, Criminal, and Private Asylums in Ireland for the year ending December 31st, 1905.*

As the progress of lunacy in Ireland for the more important period of ten years has just been the subject of review here, it will not be necessary to make any lengthened commentary on the last annual Blue Book.

There was a total increase of 369 in the number of insane in institutions during the year 1905, which was a good deal higher than that of the previous year (202), but 131 less than the average increase for the past ten years, which was 500.

The numbers in district asylums increased by 442, while those in workhouses decreased by 105, the total of insane inmates of which has now reached the lowest figure since the year 1880. The highest number occurred in the year 1894, *viz.*, 4076; and since then, with one or two fluctuations, there has been a steady decrease in workhouse patients up to last year, when they numbered 3215, being a reduction of 861 in the eleven years. In 1880 of the total number of insane under care 67 *per cent.* were in district asylums and 27 *per cent.* in workhouses. In 1905 81 *per cent.* were in asylums and 14 *per cent.* in workhouses.

The total admissions for 1905 showed a decrease of 115, those to district asylums having decreased by 138, while the admissions to private asylums increased by 23. The number of admissions into district asylums was lower than for any of the three previous years, but in the case of private asylums it was the highest on record. While the readmissions to district asylums decreased by only 1, the first admissions were 137 less than in 1904.

During the past twenty-five years the proportion of insane under care to the general population has more than doubled, having risen from 250 to 532 per 100,000. If those at large be included, the ratio reaches the high figure of 620 per 100,000.

The recovery rate was 36·8 *per cent.* on the admissions, and the average death rate 7·7 *per cent.* on the daily average, both about the same as the average for many years past. Consumption accounts for 28 *per cent.* of the total mortality. If the last two quinquennia be compared, although the absolute number of deaths from consumption has—like the general mortality from all causes—increased, the relative mor-

tality from this disease has fallen from 29 in the first to 27 *per cent.* in the later period.

The inspectors comment unfavourably on the neglect of pathological studies in Irish asylums, which, they say, show little signs of progress. This is, unfortunately, a fact. But in singling out the medical officers as those upon whom the responsibility for this mainly rests, and to whom, inferentially, blame is to be attached for remissness in this respect, they put the saddle on the wrong horse. They say, "An obligation would seem to be cast on the medical officers of asylums to utilise those materials for the study of the morbid histology of the nervous system which are available in their institutions." No doubt; and in this probably most of the medical officers would agree with them. But they say not a word about the difficulties which attend any efforts of the medical staff in Irish asylums. Only in the case of unclaimed bodies, and very rarely with the consent of relatives in other cases, can *post mortems* be held. So long as the reprehensible custom of "waking" the dead is adhered to the same difficulty will continue. And to urge a duty on men who are, in the large majority of instances, prohibited from fulfilling it, while holding up as an example the excellent work that has been, and is being, done in other countries, where "the investigation of the pathological changes induced by mental disease is being pursued with praiseworthy energy," is merely a counsel of perfection. No doubt some asylum doctors may by superior tact and power of moral suasion succeed better than others in overcoming popular prejudice, but there is no denying the fact that this forms, over the greater part of Ireland, an almost insurmountable barrier to progress in pathological study, just as it did for many centuries in the very countries alluded to by the inspectors, which have, however, reached a more enlightened stage in their appreciation of the value of scientific work.

We are heartily in accord with the inspectors in their regret that "some arrangement is not come to by which a number of asylums might combine in providing a common laboratory, and in appointing a pathologist who would give instruction to the junior members of the staff and carry out the most important investigations." That this has not been done is not due to any apathy on the part of the medical officers, but altogether, or almost altogether, to the indifference of the committees of management. Some four years ago this Association took the initiative in an endeavour to bring about the founding of a central pathological laboratory such as the inspectors desiderate, but the proposal met with only a chilling reception from the asylum committees; and at the conference of these committees, which met in Dublin in 1903, the subject was again brought prominently forward, and a resolution approved of in favour of such an institution, but, as is not unusual in Ireland, calling on the Government to provide funds for its establishment. Needless to say, the project has not advanced one step since then, nor is it likely to until the committees themselves show a livelier interest in achieving it by sanctioning the very moderate annual contribution required for the purpose, which, if distributed over all the asylum districts except, perhaps, the large urban ones which are in a position to do their own pathological work, would involve a very inconsiderable

addition to the ordinary expense of maintenance. Or, if laboratories in the Dublin and Belfast asylums were made centres for pathological work for the north and south of Ireland respectively, towards the maintenance of which the various district asylums would contribute in proportion to their size, a good deal of preliminary expense would be saved. Unfortunately, the average county councillor is not, as a rule, imbued with even the feeblest enthusiasm for scientific progress, and if he does not see the prospect of some immediate and palpable advantages from any proposal, the purse-strings which are entrusted to his control automatically contract, and there's an end of it.

An important legal decision from a financial point of view was obtained, mainly by the energetic action of the governing body of the Richmond Asylum, in 1905, who brought a Petition of Right, and obtained a judgment in their favour, subsequently affirmed on appeal, to the effect that all cases committed under the Army Act, 1881, s. 91, and the Naval Enlistment Act, 1884, s. 3, are "criminal" lunatics within the meaning of the sixth section of the Act 1, Edward VII, cap. 17. The entire cost of the maintenance of such cases now devolves on the State, and must be paid out of monies voted by Parliament, thus relieving the local rates to that extent.

Another legal decision of some importance was given by the Law Officers of the Crown, that so long as a patient remains insane he cannot be discharged from a district asylum to a workhouse. Formerly, it was a common practice to discharge unrecovered but harmless patients to workhouses, thereby relieving overcrowding in asylums. This procedure is no longer permissible, and, provided that there is sufficient accommodation available in asylums, the award is unquestionably wholly in the interests of such patients.

The inspectors record with regret the deaths during the present year (1906) of Dr. L. T. Griffin, of the Killarney Asylum, and of Dr. Oscar T. Woods, of Cork Asylum. They dwell in sympathetic terms on the lovable character of Dr. Griffin, which endeared him to patients and staff alike. He has been succeeded by Dr. E. W. Griffin, A.M.O. of the asylum. Dr. Woods' personality was better known to the members of this Association of the Irish division, of which he was at one time Secretary and subsequently President. His all too early demise was a matter of the sincerest regret to all his former colleagues in the work of the Association, most of all to those who knew him best. One of his assistants has been appointed as his successor, but owing to some alleged legal informalities in the election, the appointment has not, as yet, received official sanction.

The retirement of Dr. J. H. Hatchell, R.M.S., of Maryborough Asylum, in 1905, is also noted, who was superannuated "after thirty-seven years' faithful service." He has been succeeded by Dr. Coffee, formerly A.M.O. in Limerick Asylum.

In their Report of the Youghal Auxiliary Asylum the Inspectors write on the whole favourably as to its internal management. Undoubtedly the condition of insane patients who were transferred there from workhouses has been materially improved—there would not be any great difficulty in that—and the kitchen, laundry, heating, lighting, and sanitary appointments appear to be excellent and up to date. There

are, however, some grave defects connected with this *novum* (and yet *altum*) *experimentum*. The staff is far from being numerically adequate to the just treatment of the patients, as a result of which the number of casualties is unusually heavy; and the patients are frequently kept indoors all day, and when they do get out, exercise appears to be allowed only within the confines of airing-courts, a system long since abandoned and obsolete in most well-managed asylums.

But what they regard as "the great defect" is the insufficient medical supervision, which consists merely of a short daily visit from an outside medical man who has had no special training in the treatment of the insane, and whose main interests lie altogether outside those of the institution, which are, in fact, a mere subordinate incident in his professional life. It is here that the retrograde character of the principles upon which this institution is sought to be conducted on supposed economical grounds are seen in their most unfavourable light. An asylum for the insane, of no matter what class, is essentially an hospital, and the principal officer, administrative no less than professional, should be, as in all properly constituted asylums, a medical man, who should be in direct, immediate, and continuous charge of the patients—not a mere casual and, not improbably, uncritical visitor. The scheme is still in a more or less experimental stage, and it remains to be seen whether it will eventually justify the sanguine anticipations of its promoters.

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*Psychiatry.* By STEWART PATON, M.D., Director of the Laboratory of the Sheppard and Enoch Pratt Hospital, Maryland. J. B. Lippincott Company, 1905. Price 18s. net.

This text-book for students and physicians is an interesting and compendious volume of over 600 pages. It opens with a chapter describing the scope and methods of modern psychiatry, claiming that the latter is a branch of general medicine, and that the progress made by the addition to our knowledge in regard to those morbid conditions of the body essentially connected with the "sources of rational thought and action" is the justification for this book.

Dr. Paton urges the necessity in America for a fully equipped and well-organised psychiatric clinic, under the control of a university, a proposal also much favoured in our own country. The author advocates the necessity for biological study before the meaning of disordered function is understood in regard to the central nervous system. Dr. Paton attaches little importance to the theoretical or speculative study of the nature of mind. The metaphysical relationship of mind and body is, in his opinion, of little interest to the clinician or the alienist, who, he states, is concerned only with the physico-chemical changes of cerebral processes, and he very rightly states that the increased study of psychopathology has given a new interest to psychiatry.

As a test of insanity he agrees with writers in this country that conduct gives the truest measure of the functional defects of the nervous system, and he rejoices that functional psychology has taken the place



of speculative or pure psychology. In the earlier part of the work he advocates the study of sociology, economics, and ethics. He recognises the importance of an exact and even scrupulous attention to symptoms, with a view to their proper differentiation and full appreciation. In the second chapter the nature of alienative disorders of function is considered, and it is pointed out that mental disorders are essentially disorders of the whole brain, not localised but general. He points out how much remains to be done by the pathologist who works in "serene peace" in his laboratory, and especially does he call for some standard in regard to nerve-cells for different tracts in the brain, whereby certain deviations might assist a positive diagnosis in regard to pathological findings, as, for instance, where Tuzek describes the disappearance of the tangential fibres in general paralysis and Alzheimer has differentiated between certain arterio-sclerotic lesions and those found in general paresis. Again, Nissl has stated the possibility of differentiating between parietic lesions and others due to syphilis, all founded upon some assumed normal state. In this chapter it is suggested that material changes in any organ will give rise to disorders of function, and when disturbance of mental functions does occur these may, so to speak, become "self-accumulative." There is support for this view, and we ourselves believe that long-continued functional disorder may in the end become structural. As an earnest student of Kraepelin, Dr. Paton strongly urges the necessity for a general survey of the whole course of the disease whereby clinical pictures rather than analysis of individual symptoms are obtained, and he cites dementia præcox and manic-depressive insanity as examples. In his strong advocacy of a bedside study of insanity we heartily concur.

Chapter III, which extends over 100 pages, is devoted to the symptomatology of alienation, the whole chapter referring to the various mental symptoms met with in cases of insanity. After emphasising the statement that all insanity is the result of bodily disease, and that the cortex is the especial substratum for the reception, retention, and elaboration of sensory stimuli, Dr. Paton details the highest cortical functions as those of attention, judgment, and volition. He rightly regards the activity and integrity of the associative memory as closely affecting consciousness. Inferences are formed by the elaboration of sensory images received in youth, and they depend upon recollection or memory. It is by a comparison of these inferences that judgments are formed, which are intellectual processes of slow growth; hence the variety of insanity known as paranoia, a reasoning insanity, is rare in children, who are dominated by sensory abnormalities, affective states, or memory pictures.

It is pointed out that much of the complex personality is dependent upon organic sensations, and the muscular sense is an essentially important factor; a disturbance of the organic sensations causes apprehensiveness and a feeling of distrust; a condition of bodily unrest thus occurs which tends to fix the attention, as is inevitably the case with the person of one idea, whose attention is riveted upon the emotional tone associated with the idea. The genesis of insane ideas and the growth of hallucinations, anomalies of memory, emotions, and conduct are dealt with at length. Although a useful chapter, this is by no means an interesting one, and we find that characteristically American tendency

in it, *viz.* the introduction of new words, and the appearance in a text-book for students of such terrifying polysyllabic neologisms as *noöpsyche*, *thymopsyche*, *allospsychic*, *akoasmata*, *accustomata*, *parageusias*, *pseudoreminiscences* and many others which may even somewhat tax and perplex those "physicians" to whom the work is dedicated.

Chapter IV should not be missed by any student of psychiatry. It deals with the examination of mental cases, and here the author most wisely deprecates the taking of records on specially constructed charts on which a list of symptoms is printed, the observer being expected to state categorically whether such a given symptom is or is not present, a most pernicious practice, as he states, in which all who teach students or who appreciate the value of a description of the salient features in a case will readily concur. The whole personality is missed in notes of this kind, for no clinical picture will fit into an arbitrarily constructed frame which is meant only for untrained observers and time-servers. Such case-sheets do well as impositions for indolent school-boys, but they miss the point for those who desire a complete knowledge of clinical methods and who appreciate research. Importance is placed upon the family history, especially in regard to evidence of deterioration, degeneracy (suicide, alcohol, eccentricity, etc.), and of causes of death. Stress is also laid upon the ante-natal personal history, *viz.*, as to mental shock, trauma, nephritis, etc., in the parents—important particulars often overlooked. The personal history through infancy (convulsions, teething, walking), childhood, and puberty up to the full attainment of vigour is also emphasised.

The history of the present illness is sketched, and valuable hints afforded as to stigmata of degeneration revealed by the state of the ears, eyes, teeth, mouth, skeleton, hair, senses, the motor and trophic systems. In this chapter also the manner of response and its content, the *facies*, attention, distraction, dress, pose, impulse, or negativism, are all fully discussed, and it concludes with a diagnostic feature of much value and greatly resorted to of late, *viz.*, the examination of the cerebrospinal fluid. The method of ascertaining definitely whether a case is or is not one of general paralysis in its early stages can easily be effected by lumbar puncture, centrifugalising the fluid in a uniform manner, and then preparing slides after staining. Given due care, there is now no danger in carrying out this method of diagnosis, the significance and the details of which are fully explained in this chapter.

Chapters V and VI deal with general treatment and special hospitals for the insane, and Chapter VII deals lucidly with causation. Then follow chapters upon clinical pictures or "classification," and upon the so-called dementia præcox—a division which has not hitherto found favour in this country. It would take too long to deal with the classification and terminology of insanity, which have so recently found adequate space in the *Journal*, and we pass to Chapter XV, in which the Dementia Paralytica group is described, commencing with a short but interesting historical sketch.

Dr. Paton draws attention to the importance of a careful study of disturbances referable to disorders in the internal viscera, even in the earliest stage of the disease, and it is certain that clinicians are more and more recognising the importance and significance of pathological

states of the internal organs in mental disease, as the recent work of Drs. Lewis C. Bruce and Ford Robertson has thrown much light in this direction. The auto-intoxication theory of these observers is noted, but no mention is made of Ford Robertson's diphtheroid bacillus as an etiological factor in general paralysis. As regards syphilis, he says, "It is obvious that in the great majority of cases syphilis is an important etiological factor, but it is impossible to substantiate the view that all others are necessarily of secondary importance."

The question of the etiology of general paralysis in this work is considered as being *sub judice*, and the absence of dogmatism in this connection is in keeping with the general open-minded handling of the subject which is so comprehensive a feature of the work.

As foreshadowed in the earlier chapters, much stress is laid here, as elsewhere in this book, on the important part played by the organic sensations in the early development of morbid mental states.

An admirable description of the symptoms of this disease terminates with a concise and well-illustrated account of its pathology.

The next chapter deals with the Epilepsy group. In discussing the pathogenesis of epilepsy great stress is laid upon hereditary influence, and especially upon a history of alcohol in the ancestry.

The author goes on to give timely warning by saying that "while it is only right to be exceedingly cautious in minimising the importance of this drug as an etiological factor, yet the fact must be kept in mind that existing evidence does not fully justify the statements so frequently made to the effect that there is an immediate causal connection between the occurrence of alcoholism in a remote ancestor and of epilepsy in the individual of a later generation."

In Chapters XVII and XVIII will be found a lucid and instructive account of the hysteria group and of the neurasthenic and psychasthenic states. For the sake of facility in description—which Dr. Paton regards as a strictly provisional expedient—neurasthenic and psychasthenic states are grouped together. Under the heading of the former are placed the chronic nervous exhaustions and "constitutional depressions," under the latter those cases "in which the symptoms have a tendency to change and recur with some degree of periodicity." He regards psychasthenia as occupying a medium position between epilepsy and hysteria. In this group are described the various obsessions and imperative processes.

Chapter XIX is devoted to those psychoses associated with organic disease of the central nervous system. The mental symptoms associated with arteriosclerosis are well and fully described. Much attention has lately been given to the pathological conditions which occur in the central nervous system as a result of vascular sclerosis, and the importance of these changes cannot be over-estimated. The author gives a detailed description of the early mental symptoms, a thorough knowledge of which should be of great interest and value to the general practitioner. He describes a case occurring as early as twenty-two years, in which the arteries were uniformly thickened and sclerosed.

The paragraph which deals with syphilis in this connection seems too much compressed. It is suggested that "the so-called juvenile paretics, as far as the present evidence indicates, should be classified as heredi-



tary syphilitics, as they usually present more of the symptoms of cerebral syphilis than of general paresis."

Chapter XX deals with the paranoia group. As in other forms of insanity so in paranoia it has been a prevalent custom to include under one heading a number of totally different mental states, a custom arising from attempting too hastily to diagnose the condition based upon the prevailing symptom—whether mania, melancholia, or the "systematisation" and persistence of insane ideas. Such methods serve no immediately useful purpose, and only retard the scientific development of mental disease. Improved clinical methods and the careful study of the development, cause, and termination of the various symptoms-complex can alone, in many instances, lead to a real advance in our knowledge. The great importance of this point is never lost sight of in this work, and in this chapter Dr. Paton carefully distinguishes the various paranoid states (such as occur in certain alcoholic psychoses, in acute confusional insanity, in the so-called dementia præcox group, and in manic-depressive insanity) from the "small residual group of cases which cannot as yet be definitely assigned to any of the psychoses hitherto described, and which are conveniently described under this heading." This chapter closes with an interesting description of the "litigious insanity" described by Hitzig.

An interesting analysis of senile involution and a description of the senile psychoses terminate a work which is a very valuable text-book and book of reference.

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*Studies in Clinical Psychiatry.* By LEWIS C. BRUCE, M.D., F.R.C.P.E.  
London: Macmillan & Co., Limited, 1906. 8vo. Price 10s. 6d. net.

Dr. Bruce has produced a book which is a record of sustained and careful observations continued over a considerable number of years. He has broken new ground and harvested a wonderful crop, and we congratulate him upon his methods and results. Dr. Bruce does not present his conclusions as final and irrevocable, but rather admits that his views and his evidence are still incomplete. Consequently, his classification, broadly under the headings of "non-toxic" and "toxic" insanity, may require revision and rearrangement. That is of secondary importance, and need not detain us at present. The point of importance is that he has attacked the problems of psychiatry with the aid of new forces untrammelled by ancient formulæ. It is now long since Skae directed special attention to the bodily conditions associated with insanity, but it has only been within very recent years that the logical development of his teaching could have been carried to these decisive findings. Dr. Bruce reiterates what many have stated—that the prominence and bizarre character of mental symptoms have confused the issues and done much to prevent the advance of knowledge. His methods of investigation have been adopted from recent clinical and laboratory experience, and are designed to estimate the somatic conditions which result in mental disorder. Consequently, the book opens with a consideration of the physical symptoms of mental diseases on the ground that some diseases, such as smallpox, appear to confer



immunity upon the person who has contracted them and recovered ; while others, such as rheumatism, appear to confer no immunity, but render the person more liable to another attack.

In fact, the position is that the diseases issuing in insanity are generally of a toxic character. This, of course, is evident in a case of myxœdema, but it has been less evident in a case of ordinary mania. Dr. Bruce has adopted the methods of Widal, and finds agglutinines very generally in the blood of acute cases of mania. Further, in every case of acute continuous mania which has been examined (not once, but by repeated observations for weeks or months) leucocytosis was demonstrated. Early in the acute stage this reached from 18,000 to 20,000 per c.mm., and the percentage of polymorphonuclear cells never below 70 per cent. The leucocytosis varied with the exacerbations of the disease, and as recovery became complete the percentage of polymorphonuclear cells fell, while in many cases the leucocytosis persisted—probably in a protective leucocytosis.

It is difficult to convey in a few words what requires many pages of records and illustrative charts to make plain. The study of the blood, and especially the behaviour of the leucocytes, may be regarded as the last expression of medical science. The opsonic index will, no doubt, carry Dr. Bruce's observations still further ; meanwhile, unless the advanced workers are hopelessly wrong, he has established a new foundation for psychiatry, which gives occasion for hope in treatment. It may be that some will vigorously oppose these conclusions, or give a reluctant consent ; but they can only be combated by a devotion and experience commensurate with Dr. Bruce's. Many of us have insisted on the importance of prodromal somatic symptoms, many of us have clearly recognised the toxic nature of various mental disorders, but we have now a method of demonstrating the truth of these vaguer guesses. A word of warning, however, for the demonstration is neither easy nor rapid. Dr. Bruce has given a practical, unvarnished account of his labours, but the technique is not to be acquired in a day, nor are the facts to be recognised without guidance, experience, and hard study. No doubt in time much of the new method will be simplified and rendered available for the purposes of everyday practice, especially in reference to questions of prognosis.

We need not, in this brief notice, enter on a full account of Dr. Bruce's researches on the blood-pressure in melancholia, and the pre-urea bodies which he regards as possibly toxins effective in causing mental disorders, for the book will be read by those who are concerned to understand insanity and to promote effective treatment. It is not given to everyone to devise new methods and experimental proofs, but it is easy to study original and suggestive work, especially when it clears up obscurity in the causation of disease and deals with a rational system of treatment. The distinguished merit of Dr. Bruce's work is his success in bringing the physiological chemistry of the morbid processes of insanity into line with other similar somatic conditions and in directing due attention to these facts of disease.

Quite recently the *Times* gave space to an attack on the psychiatrists of the country, freely condemning them for what they had done and for what they had left undone. We are well accustomed to those captious

critics who use the public press to abuse the public ear, and are not ashamed to make manifest their ignorance in writing about "the practical exclusion of insanity from the area of scientific investigation." If the distinguished writer had condescended to inform himself of the work published by Dr. Bruce and others from time to time, he could hardly have offended so unwarrantably. We trust that, in the course of time, he will gain some slight inkling of what is being done and rely less confidently on the sport of his inner consciousness. We have every confidence that these *clinical studies* will not remain unheeded by the general physicians and the neurologists of the country, but that they will become familiar to all who have to deal with insanity, incipient or declared.

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*Mysticisme et Folie.* By Dr. A. MARIE. Paris : Giard et Brière, 1907. Pp. 342, 8vo. Price 6 frs.

Dr. A. Marie, who, in addition to his functions at Villejuif Asylum, is also a Professor at the Collège Libre des Sciences Sociales, has in this very thorough and comprehensive study of normal and pathological psychology taken up and developed the question of the relations of religious mysticism to insanity, which half a century ago was so admirably discussed by Calmeil.

The recent advances which have been made in the investigation of the primitive ways of thinking of savages have, however, rendered possible a broader and more thorough discussion of the question, and the author has fully availed himself of the results reached by Tylor and others. In order probably to emphasise his anthropological point of view, he has obtained an Introduction to the volume from Dr. Thulié, the Director of the Paris École d'Anthropologie. It can scarcely be said, however, that this Introduction strikes quite the right note. Thulié belongs to an aggressively free-thinking school of anthropologists which flourished in France thirty years ago, but no longer corresponds to the calmer and more judicial attitude of investigation to-day. The main object of his Introduction seems to be to assert that "religions are the scourges of humanity." Dr. Marie himself indulges in no anti-theological declamations, although he evidently regards theological ideas as belonging to the past rather than to the future of humanity; he is careful to point out that he makes no attempt to dismiss the great mystics of history as merely pathological cases, and that he is far from wishing to identify theology and insanity.

Dr. Marie's fundamental point of view throughout is anthropological and evolutionary. He believes that mankind will always require a religious faith in ideas of some kind, but that there is a regular progression in theological conceptions from primitive savagery onwards. When a man, born in civilisation, returns by a kind of atavism to the attitude of animism, fetichism, magic, or other religious conception which prevailed among primitive men, it is then only that religion becomes an insanity. The morbid deviations of to-day reproduce various historic anomalies presented by psychic evolution. "Every

cerebral malady causes a fall to subjacent mentalities which were in their time the highest points attained by human intelligence. All the mystical aberrations are thus a necessary fatality of the human mind. They were the efforts and errors of tottering intelligence seeking points of support beneath the recognised inanity of initial conceptions. The brain of contemporary man, when mutilated, takes up again the moral crutches used by the ancestral brain."

The book is divided into two parts. In the first, which is mainly anthropological, the author traces the results now reached concerning the origins of religions and mystic conceptions, and their evolution from naturism, animism, and magic to monotheism. In the second part, which constitutes the more important portion of the work, the various mystic and religious psychoses are discussed in order, with their relation to degenerescence.

HAVELOCK ELLIS.

*Sammlung Kleiner Schriften zur Neurosenlehre (Collection of Short Studies on the Neuroses).* By Professor FREUD. Leipzig and Vienna: Deuticke, 1906. Pp. 234, 8vo.

Professor Freud's elaborate and painstaking efforts to elucidate the mechanism of hysteria and of various allied neurotic conditions, notwithstanding the opposition with which they have sometimes been met, have aroused a growing interest, and he has been induced to bring together the various studies (three of them in French) which he has published on this subject during the past fourteen years. The volume forms an admirable introduction to Freud's work. We are enabled to follow the course of his thought—which has constantly undergone fresh modifications in various directions—from the period when, as a pupil of Charcot's, he struck out on a new road down to the present. The first paper is a sympathetic obituary notice of Charcot, which at the same time reveals his own point of departure from the master's standpoint; the last is a new statement of "My Views on the Part played by Sexuality in the Etiology of the Neuroses." Charcot would have said it played no part, for he believed that the whole of the etiology was covered by heredity; but Freud is more than ever convinced that this is not the case, and he endeavours to set down as clearly as possible where he considers that sexuality intervenes as a factor, and in what direction his views have been modified by experience. Hysteria he still regards as "the expression of a special relationship of the individual's sexual function," and he still believes that childish experiences have an influence over the later direction of the patient's hysterical state, but he no longer speaks of early sexual experiences as "traumatic," and he recognises the part herein played by hysterical imagination; "infantile sexual trauma" gives place to "infantilism of sexuality." Along this line he has been brought somewhat nearer to Charcot's position and attaches primary importance to heredity and constitution, adding, however, that he thinks more of "sexual constitution" than of general neuropathic disposition. Masturbation he regards as a main cause of neurasthenia, and coitus interruptus as producing neurosis of anxiety.

This view certainly requires for its justification the emphasis on heredity, for minor sexual aberrations are far too common to be regarded as injurious to a constitution that is not aboriginally unsound.

While these studies are mainly concerned with neurasthenia and allied states, in one interesting passage (pp. 124 *et seq.*) Freud suggests that in some cases paranoia resembles hysteria and imperative ideas in that its symptoms may be determined by the suppression of painful memories of a sexual character dating from early life. A case is brought forward in which this could be clearly shown. This idea is suggestive, and it is probable that many readers, recalling cases of systematised delusion with which they were intimately acquainted, may bring to mind instances in which an ancient episode of sexual nature which the patient had, so far as possible, pushed out of consciousness, serves to form part of the basis of the later auditory hallucinations.

In an essay on psychotherapy the author discusses the origin and development of his method in its therapeutical aspects. The method appears to have been originally due to Breuer, who called it the "cathartic" method; Freud prefers to call it the "analytic" method. It is entirely distinct from hypnotism (which Freud has abandoned for over eight years), being indeed the exact opposite of hypnotism. By the hypnotic method it is sought to put something into the patient; by the cathartic or analytic method it is sought to take something out of him. Freud illustrates the difference by reference to Leonardo da Vinci's technical distinction between the different ways of art, the *via di porre*, or the painter's way, of putting in something that before was not there, and the *via di levare*, or the sculptor's way, of removing something that is there.

Freud's style is always clear, attractive, and sincere, and this book is well worth the perusal of all who desire to become acquainted with the work of one of the subtlest and most original investigators in a difficult field.

HAVELOCK ELLIS.

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*The Dissociation of a Personality.* By MORTON PRINCE, M.D., Professor of Diseases of the Nervous System, Tufts College Medical School; Physician for Diseases of the Nervous System, Boston City Hospital. New York: Longmans, Green & Co. 10s. 6d. net.

This book, which is an amplification and continuation of a paper read before the International Congress of Psychology, Paris, 1900, is a study of perhaps the most remarkable case of multiple personality, or, to be more accurate, of dissociated personality, that has been recorded. The patient presented three distinct personalities, in addition to minor hypnotic states, and it was not till she had been carefully watched for almost four years that her real self was discovered—and found to be none of the three. One of these individuals was very remarkable; the other two were alternating personalities of the more ordinary type, but this was not only an alternating personality—in which form she displayed robust health and a vigorous character—but also an extensively developed subconsciousness. As such she appeared to have existed



since childhood; she remained sane when the patient was delirious during an attack of pneumonia, so that later, as an alternating personality, she was able to give an account of the delirious thoughts and explain the delirious acts; she could influence the other personalities, and even hypnotise them. As an alternating personality she had full knowledge of the other states, but they had none of her, nor had the real self when finally reintegrated. The book before us is the first volume of a larger work—*Problems in Abnormal Psychology*—and is to be followed by another, in which the psychological questions involved will be discussed. It will be better to defer a complete review of this first volume till the work has been concluded. In the meantime, however, attention may be drawn to a few points. First, we must congratulate Dr. Prince on the insight he displayed, on the care and labour he devoted to following up the case, and on the success he so deservedly achieved. Secondly, his view of neurasthenia deserves careful attention; he holds it to be a perverted reaction to environment, due to dissociation of the consciousness. Another point is the very incomplete success of hypnotism when it consisted merely of suggestions to a disintegrated personality; its true work seems to lie in the direction of reintegrating the original self. Indeed, it is to be observed that whereas the patient had exhibited only one abnormal personality for several years before hypnotic treatment began, a second followed very rapidly on the commencement of that treatment, and the third appeared little over a year later. Though there is not sufficient proof, one cannot help suspecting that this further dissociation was due to the hypnosis. If this be so, it confirms the view that hypnotism is a dangerous weapon to use, its direct effect being to increase the evil. On the other hand, if the true original personality be carefully sought out and reintegrated by skilful suggestions, the good thus done may far outweigh the immediate ill-effects. Dr. Prince seems to have benefited his patient greatly; had he been less clear-sighted and unwearying, he would probably have done her harm.

The book is well written and extremely interesting. Indeed, the only fear is that the story of the three personalities, with their different characters, their trials and difficulties, the practical jokes played by one upon the others, and the efforts of that one to outwit Dr. Prince, so that the original personality might not be reintegrated and she herself "squeezed" out of existence in the process, may obtain a vogue among unscientific readers and fall into the hands of the patient's friends. It should be read by all who are interested in normal psychology as well as by those who devote themselves to pathological states of mind.

P. C. SMITH.

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### Part III.—Epitome of Current Literature.

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#### I. Neurology.

*On the Functions of the Nucleus Caudatus (Riv. di Patol. Nerv. e Ment., July, 1906). Pagano.*

These researches form a study of the basal ganglia of the encephalon which Dr. Pagano has been prosecuting for two years. With the help of his method of injections of curare he has succeeded in discovering in the cerebellum distinct motor centres, and a zone in which irritation provokes evident emotional excitement. In a review of the contributions of the physiologists who have treated of the functions of the nucleus caudatus he shows how they differ from one another.

Dr. Pagano has made more than eighty experiments to ascertain the functions of this organ. After a method which he describes, he claims to have succeeded in passing injections of solutions of curare into different parts of the nucleus caudatus. He used neither narcotics nor anæsthesia, as he considered that these masked the symptoms which he wished to observe. His experiments are given in detail in a paper filling thirty pages.

Dr. Pagano presents the following conclusions :

(1) That the excitation of the anterior third and of the middle third of the nucleus caudatus provokes in dogs something very like the emotion of fear. This effect is best brought out when the injections reach the internal half of the organ. All the characteristics of this emotion are present : the gesticulations, the play of the physiognomy, the cardiac and respiratory phenomena, the actions of the intestines and the bladder, the state of the pupil, and the effects of threats and noises, all go to form conclusive evidence of this emotion.

(2) The excitation of these points, but especially of the middle third, provokes a strong erection of the penis, which appears immediately after the injection, and persists until death.

(3) The excitation of the anterior extremity of the nucleus caudatus produces an agitation which presents the appearance of fear modified with anger.

(4) The excitation of the posterior third of the nucleus caudatus provokes a series of manifestations of anger ; the grinning and barking, the readiness to attack and bite, and the whole attitude leave no doubt as to the nature of the emotion.

(5) The excitation of the outer part of the anterior third of the nucleus caudatus, besides some emotional disturbance, provokes in a greater degree intestinal and vesical phenomena.

Dr. Pagano has, by varying the direction in which he introduces his injecting needle, taken precaution to keep distinct the result of irritation of neighbouring organs. With him the nucleus caudatus is a centre of some of the emotions. He favours Bechterew's views that in the thalamus opticus we have a centre of reflex innervation of the groups of muscles

which afford expression to the different affectional and emotional states. Pagano adds that many clinical observations have confirmed this view. Bechterew's researches have also shown that the posterior corpora quadrigemina have to do with the expression of emotional states. Their destruction is followed by deafness, aphonia, and paralysis of muscular exertion in standing and walking, while their excitation provokes the emission of vocal sounds, movements of the eyes and of the limbs of the opposite and then of the same side with elevation and pushing forward of the ear of the opposite side.

WILLIAM W. IRELAND.

*On the Left Hemisphere and Motor Actions* [*Die Linke-Hemisphäre und das Handeln*] [original articles in the *Münch. med. Wochenschrift*, Nos. 48 and 49]. (*Cbl. für Nervenheilkunde u. Psychiat.*, July 15th, 1906.) *Liepmann*.

Dr. Liepmann, in a series of observations on ninety paralytics in the Infirmary of Berlin, has sought to ascertain how the power of movement was affected on either side. This examination was comprehensive. He took note both of the performance of voluntary actions, such as knocking at the door, ringing a bell and swimming, and movement expressions, such as snapping the fingers, beckoning and warning, as well as the rehearsal of these movements from memory. He tried to exclude cases in which the internal capsule was implicated, limiting his studies to the effects of the lesions of the cerebrum.

Dr. Liepmann found that in 20 out of 41 cases of left-sided paralysis movements were duly performed with the unaffected right arm, while in right-sided paralysis the motor functions of the left arm were also impaired, although in a lesser measure. In other 21 cases, the motions were not sufficiently precise to allow conclusions to be drawn therefrom. In 20 patients, with paralysis of the left side, 14 had also motor aphasia with injury to the performance of movements of the left arm. In the remaining 21 cases, there were only 4 in which the use of the left arm was noticeably impaired. The author took precautions not to confound cases of helplessness of the hands with sensory ataxia or with deafness. He found that in his cases the memory of the movements, as tested by rehearsals, was also affected. In four cases, where an examination was held, the author could find no changes in the area assigned for the left-hand centre nor in Broca's convolution. In these four cases examined, there are no lesion of the cortex noted in two of them; there was extensive injury to the corpus callosum. The author is disposed to place the lesion on one side of the centrum ovale through which the projection centre (Flechsig's) and the fibres of the trabs going to the right sensomotorium should be interrupted.

Dr. Liepmann comes to the conclusion that, in those motor impairments which followed the lesion in the left hemisphere, the movements of expression, as well as the performance of actions by the hand, are both affected. The rehearsal of movements is also impaired, but the understanding of symbols may remain. In the case of sensory aphasia, however, the awkwardness of movements may be owing to the impairment of the conceptions of time and space. This impairment of motor power in the left side following right-sided paralysis displays the pre-

eminence of the left hemisphere consequently on the preferred use of the right hand. The left hemisphere is taking a greater part in the motions of the left side of the body than is generally thought. Dr. Liepmann considered that, through a greater practice in the use of the other hand, the right hemisphere would be less dependent upon the lead of the left one, which would be an advantage to patients affected with lesions of the left brain. Moreover, it appears from the author's experiments, that the loss of motor impressions is an important deficiency in dementia. It is also conceivable that the possession of motor images in both hemispheres might heighten their liveliness, or that the relief of work thrown thereon on the left hemisphere, by the increased cultivation of the right one, might allow of the performance of higher functions.

WILLIAM W. IRELAND.

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## 2. Physiological Psychology.

*The Mechanism of Attention* [*Le Processus et le Mécanisme de l'Attention*]. (Rev. *Scient.*, April 7th, 1906.) *Nayrac*.

The author appears to have made no experiments of his own, but attempts to explain attention on the basis of recent researches (especially those of François Franck) concerning the organic phenomena which accompany attention. There are four theories of attention—(1) the motor theory (Ribot, Ward, Stout, and most contemporary psychologists); (2) the sensorial theory (Bastian); (3) the mixed or sensori-motor theory (Waller); (4) the theory of reduction or simplification (James, Richet). It is the last which Nayrac accepts and seeks further to develop. According to this theory attention is mainly central; it is “a general tension of mental activity,” “a unique force determined by the combined play of all the energies of the individual.” It is thus a general property of the nervous system, to be assimilated to effort and to will; “there is no will without attention, and there cannot be attention without will.” The question of the mechanism of attention is also thus found to be the same as that of the mechanism of the emotions, which the author resolves in a contrary sense to James and Lange. The brain, according to Nayrac, is the first agent of attention, and the peripheral phenomena follow the central. This is the theory usually termed “idealist” or “psychological,” but Nayrac argues that it is just as physiological as the peripheral theory. The author's main point, however, is that attention cannot be regarded as an isolated phenomenon, but rather as “our great faculty of mental adaptation, which as soon as it wishes to come into action makes an appeal to the whole of our organism.” It adapts its forces to the end to be attained and cannot be adequately explained unless we admit that the preponderant part in it is played by the brain in general and the cortex in particular. He further considers whether attention obeys a motor or an inhibitory mechanism, and finally concludes with the following provisional psycho-physiological definition of attention: “The feeling of psychic tension which arises in part from the action of cerebral phenomena and in part from the general tonic contraction, voluntary or in-



voluntary, of our muscles. It is always manifested at the outset by organic or cerebral phenomena, accompanied by peripheral phenomena. It is conditioned by an inhibito-active mechanism. United to effort and will, it constitutes our faculty of mental adaptation."

HAVELOCK ELLIS.

*Some Psychiatric Experiences in Support of the Doctrine of Human Bisexuality* [*Einige Psychiatrische Erfahrungen als Stütze für die Lehre von der Bisexuellen Anlage des Menschen*]. (*Jahrbuch f. Sex. Zwischenstufen, Jahrgang viii, 1906.*) Näcke, P.

The doctrine that in every individual there is an organic foundation of latent bisexuality, which in a few cases comes to the surface in various more or less pronounced degrees, moulding the instincts and impulses, has of late made considerable progress. It has been adopted by various writers whose opinion carries weight, and Näcke now supports the same view in an interesting contribution from the psychiatric side. He starts from the principle that, both physically and psychically, everyone has a bisexual endowment, and that it is the plus and minus modifications of this endowment which result in men and women. If this is so, Näcke proceeds, we must ask ourselves whether there is really only one kind of normal sexual impulse, or whether sexual impulse directed towards persons of the same sex, though a much less frequent form, is not to be regarded as abnormal because it is rare. "Up to the present there is no scientific evidence to prove that the homosexual, as such, are degenerates." Those who have argued that they are have usually been neurologists and alienists only acquainted with pathological cases of homosexuality. Even pathological cases may, however, furnish evidence in support of the probably congenital character of the bisexual tendencies, and Näcke proceeds to record in careful detail the nature of the sexual, and especially the homosexual, manifestations in a series of insane patients, and concludes that such manifestations can best be explained by the theory of bisexuality.

It is interesting to note, it may here be added, that this theory also finds support in an investigation recently issued from a very different quarter. Shattock and Seligmann have been studying hermaphroditism in the domestic fowl and the causation of allopterotism, as they term the assumption of the plumage of the opposite sex; they reach the conclusion that the phenomena may best be accounted for, not by the theory of atrophy of the sexual glands, which proves to be inadequate, but by the hypothesis that the sexual glands of such birds are really bisexual or hermaphroditic (*Path. Soc. Trans.*, vol. lvii, Part I, 1906). They conclude that, even among the higher vertebrates, hermaphroditism, instead of being abnormal, may be regarded as a reversion to the primitive ancestral phase in which bisexuality was found. "The occurrence of true hermaphroditism in man being established, the question arises whether lesser grades do not occur, and whether the fairly common cases in which the human female, after the cessation of menstruation, acquires hair on the face may not indicate that the retrogression of the ovaries has been succeeded by the progression of some quiescent male tissue. Still more

remote evidence of bisexuality in the human subject may, perhaps, be afforded by the psychical phenomenon of sexual perversion and inversion met with amongst both civilised and savage peoples."

HAVELOCK ELLIS.

*On the Pathogenesis of some Impulsions.* (*Journ. Abnormal Psychol.*, April, 1906.) Janet, P.

A large number of patients have impulses to perform certain useless, bizarre, and even dangerous acts, not generally, however, very important acts; when it is a question of dangerous acts the patient is apt to feel himself drawn towards them rather than actually impelled to accomplish them. The mechanism of the impulsion is not always the same. Sometimes it is analogous to that of suggestion; at other times the impulsion appears to develop subconsciously, entering the field of a retracted consciousness too late to be easily controlled. Beyond these and other causes there is, Janet believes, a mental disposition common among the obsessed and impulsive which plays an important part in many cases.

To illustrate the factor in question five cases are briefly narrated, all in young women. One is a case of periodical dipsomania, the attacks occurring at intervals of a few weeks or months and being followed by repentance and despair; another of the rarer impulsion to eat, the patient feeling a constant need of support; the third of dromomania, or the mania for walking, the patient not beginning to feel at her ease until she has walked over forty kilometres along a public highway, so that no sanatorium can be found sufficiently spacious for her; the fourth must tear out her hairs one by one and eat them, and has thus lost a luxuriant head of hair; the fifth is never happy unless she tortures and wounds and bruises herself. These impulsions, though apparently different, have common clinical characteristics. They are periodic and irresistible, while their satisfaction is followed by good but useless resolutions.

In all these cases, the essential part of the psycholeptic crisis, Janet believes, is played, not by the impulsions, but by the period of depression and the sense of incompleteness which are in every case found to precede the crisis and to be expressed in the same terms and in the same metaphors by every patient. The impulsion is merely a way of escape from this intolerable state of mind. Thus the girl who wounds herself is far from having any desire for self-mortification. "It is my parents who believe that," she says, "but it is absurd. It would be a mortification if it brought any suffering, but I enjoy this suffering; it gives me back my mind; it prevents my thoughts from stopping; what would one not do to attain such happiness?" The other patients bear testimony to a similar effect.

These absurd acts are passionately sought, not from any insane notions, but because they really are stimulating, and really do tend to dispel the depression from which the patient is suffering. So far, therefore, from being truly morbid, these impulsions are rational therapeutic measures, the mistake being that the patient employs them in excess, and also fails to realise that there are other equally effective methods of obtaining relief. We must always remember, Janet concludes, that the cause of the impulsion is in the underlying attack of

depression, and it is the latter which we have to combat, for the psychological analysis of pathological symptoms is not only interesting from a scientific point of view, but of great importance in its practical application.

HAVELOCK ELLIS.

*A Plethysmographic Study of Attention.* (*Amer. Journ. Psych.*, Oct., 1905.) *Stevens, H. C.*

In this elaborate and important investigation, carried on in the Psychological Laboratory of Cornell University, and not easy to summarise briefly, the author shows reason to believe that the method of expression as applied to the study of the feelings—*i.e.*, the study of the organic concomitants of emotive phenomena—has failed. Many of the results were found to be equivocal, and there were different kinds of reaction in different kinds of experiment. The author accounts for the failure by psychophysical processes in the sensation, unless we are to speak of visual, auditory, and tactual attentions, as we speak of memories. It is maintained, as regards volume—the only factor that was at all uniform—that every sensory stimulus tends to produce a fall in volume; the supposed correlation between rise of volume and pleasantness is declared not to be established by previous investigation. Changes in rate of pulse and respiration are brought about by the psychophysical process of respiration, and inhibited respiration was found to characterise attention. Both pulse and respiration seem to respond less readily to visual stimuli than to tactual and auditory stimuli. The author concludes that “the plethysmograph will never serve as a psychoscope for the diagnosis of affective processes. And if by any means the method is rehabilitated, it will require more vigorous rules of use than have yet obtained to secure results of any degree of certainty.”

HAVELOCK ELLIS.

*The Negative Aspect of Hallucinations* (*Amer. Journ. Psychol.*, Jan., 1906). *Town, Clara.*

According to Stoddard, in hallucination there is dissociation of the affected sensory centres from the neurons which normally conduct to them stimulation from the sense organs, so that every hallucinatory process has two sides—a positive, resulting in the hallucinatory image, and a negative, preventing simultaneous perception by the same centre. The author, who is resident psychologist at the Frankford Friends' Asylum, has tested Stoddard's theory by studying a series of insane patients. She finds that in many cases the negative factor is evident, in many more it is difficult to determine, in a few it is unmistakably absent. An adequate hypothesis must, however, explain equally well a hallucinatory process possessing the negative characteristic and one that does not, and should, moreover, demonstrate why this negative factor is sometimes present and sometimes missing. The facts call for some other explanation than that offered by the theory of dissociation of peripheral tracts, and the author suggests that such an explanation may be found in the variability of the degree and span of attention. If the visual or auditory centre is in a state of great activity initiated by central stimulation, the whole attention may be absorbed to the exclusion of all other sensations; this

condition would be the result, not of physiological dissociation, but of concentration and limitation of attention. It is analogous to the condition of a normal person when engrossed in a book, only carried a stage further. Normally the mental content is so complex that it is difficult for one idea to absorb the mind exclusively; in insanity certain brain-centres are constantly active, while others are sluggish or inert. Hallucinations may thus depend on an abnormal activity of certain brain-centres coupled with diminished activity of other centres, or, in psychical terms, a concentration and limitation of attention. A hallucination, according to this theory, is simply a normal mental process in evolution, uninhibited by other mental processes, and the isolation is produced, not by dissociation, but by narrowing of the field of attention.

HAVELOCK ELLIS.

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### 3. Etiology of Insanity.

*Etiology of General Paralysis* [*Contribution à l'étude de l'étiologie de la paralysie progressive*]. (Clb. für Nerven. und Psych., March, 1906.) Mongeri, L.

The author bases his conclusions on cases occurring in his Constantinople practice. These cases are of exceptional interest from the etiological point of view in that (1) the patients comprise representatives of various nations; (2) these nations, owing to differences in religion and mode of life, vary greatly in their liability to syphilis and alcoholism.

After a preliminary description of the social and economic conditions prevailing in Constantinople the author applies the postulates thus gained to his 144 cases, and deduces the following conclusions: General paralysis is invariably preceded by syphilis. Instances where this cannot be proved may usually be accounted for either by the early exaltation of general paralysis, leading the patient to deny the existence of previous disease—the prevalence of pederastia, whereby infection may have taken place without leaving any discernible trace—or, finally, by the existence of hereditary syphilis. Syphilis alone is, however, incapable of producing general paralysis. Other accessory causes are requisite, of which by far the most important are heredity and alcoholism. A possible explanation of these facts is to be sought in the functional failure of the liver, involving loss of its poison-eliminating power. Out of thirty-eight cases examined from this point of view thirty-six had some organic or functional defect of the liver. It has been shown that toxins diminish the amount of glycogen; if the glycogen re-forms, recovery ensues; if not, the organism succumbs. On this theory the part played by alcoholism in the genesis of general paralysis is easily discernible. It is probable that heredity and intellectual overwork act in a similar manner.

General paralysis is, therefore, to be regarded as the result of an *ensemble* of causes. Its comparative limitation to civilised countries is explained by the fact that the necessary causes, though found singly, do not occur in combination amongst savage nations.

BERNARD HART.



*On the Etiology of Mongolian Idiocy* [*Mongolidiotiens Ætiologv*]. (*Nyt Tidsskrift für Abnormvæsenet*, 9 Hefte, 1906.) Bodil Hjorth.

Dr. Bodil Hjorth, who is Assistant Physician to the Keller's Institution in Copenhagen, found that out of 750 imbeciles 30 presented the characters of Mongolian idiocy. The proportion is the same in England and Sweden. In Germany, he tells us, it is from 1 to 2 *per cent*.

Mongolian idiocy is so marked and specific a form that one might expect it to have a determinate cause. The author has collected information about the parentage and birth of twenty-one Mongolian idiots, which he gives in a statistical table. The observed conditions assumed as possible causes are phthisis in the parents or grandparents, neuropathic heredity, and alcoholism. None of these occur so often as to show a preponderating influence. There is no record of syphilis in any of the cases. Twins, both presenting the specific characters, are noted, the father a day labourer, æt. 41, the mother æt. 42. These children were the eighth and ninth of a family of ten. Out of 21 cases, 12 of these Mongolians were the last children in the family.

WILLIAM W. IRELAND.

*Clinical and Statistical Study on Deaths from General Paralysis*. (*Ann. di Freniat.*, June, 1906.) Margaria.

Dr. Margaria, studying the cases of general paralysis in the University of Turin, finds that this malady is rapidly increasing. During the ten years from 1894 to 1903 there were 42 deaths in the first five years and 49 in the second. He thinks that the province of Turin is one of the most predisposed to paralysis, education being diffused and intellectual exertion being necessary in the hard struggle for existence, which renders the nervous system more disposed to morbid influences. As a cause, he finds the use of alcohol the most potent (27·87 *per cent.*), after that lues (11·40 *per cent.*). These two causes were united in 8·3 *per cent*. General paralysis is found to begin from the age of twenty to that of seventy years; it is most frequent between forty-one and forty-five years, 20 *per cent*. of the cases falling through this period. It is more common with men than with women, in the relation of 1 to 3·6 *per cent*. There is a great variation in the duration of this disease within ten years, but the larger number of paralytics die between eighteen months and two years.

WILLIAM W. IRELAND.

#### 4. Clinical Neurology and Psychiatry.

*Mental Symptoms in Amyotrophic Lateral Sclerosis* [*Troubles Mentaux dans la sclérose latérale amyotrophique*]. (*Arch. de Neurol.*, June, 1906.) Cullerre, A.

Considerable diversity of opinion exists as to the frequency of mental symptoms in amyotrophic lateral sclerosis. Marie states that demential symptoms, with exaggerated emotivity and puerilism, are of common occurrence. Raymond, on the other hand, regards these phenomena as exceptional.

The author—after a detailed description of several cases—arrives at the following conclusions : Amyotrophic lateral sclerosis may be accompanied by various mental disturbances—ranging from a slight degree of dementia to the extreme dementia of general paralysis—from simple psychasthenia to complex psychoses, suicidal melancholia, and systematised delusions. The delusions, however, usually resemble those occurring in senile cases. Exaggerated emotivity is common. The demential symptoms may be regarded as a consequence of the organic lesion, the delusions and other active manifestations as a consequence of the individual predisposition. It is probable that the causal toxins attack, simultaneously or successively, various portions of the nervous axis which are structurally or functionally defective, thereby engendering an association of spinal, bulbar, and cerebro-psychic symptoms. This opinion is supported by the pathological researches of Dupré, who found an extension of the disease process by way of the pyramidal tracts to the cortex, and occasionally also to the corpus callosum.

BERNARD HART.

*Stereotypy in Dementia Præcox* [*Étude clinique sur la stéréotypie des déments précoces*]. (*Arch. de Neurol.*, March, 1905.) Dromard, G.

Stereotyped movements are not limited to dementia præcox, but occur in secondary dementias, and also in some systematised delusional states. Many followers of Kraepelin, however, would bring these last largely under the head of dementia præcox.

#### 1. *Classification :*

(A) *Akinetic stereotypy*.—Attitudes, either of the whole body or of an individual member. Refusal of food, and mutism—though usually referred to negativism—are sometimes examples of akinetic stereotypy—e.g., a patient who refuses to eat, but who offers no resistance when fed with the nasal tube.

(B) *Kinetic stereotypy*.—Movements, which may be further subdivided into stereotypies of (1) *speech*—e.g., neologisms, constantly recurring words and phrases, modes of intonation ; (2) *writing* ; (3) *expression*—e.g., grimaces ; (4) *walking* ; (5) *complex stereotypies*—e.g., special modes of sitting, eating, or dressing. Masturbation is sometimes to be referred to this group.

2. *Evolution*.—The stereotypies of the acute stages of the disease must be distinguished from those of the terminal period.

(A) *Primitive stereotypies*.—The prolonged attitudes and repeated movements of katatonia. The failure of physiological plasticity, the impeded psychical process of the katatonic, are probably of toxic origin. The movements are angular, jerky, awkward, like those of a mechanical toy. This type of movement tends to disappear in later stages.

(B) *Secondary stereotypies*.—Those of the terminal period. These are not to be correlated with a functional failure in the cells, but with an organic defect, the result of the previous toxin. These movements therefore arise from imperfect intercellular connections—that is to say, a state of disaggregation. Secondary stereotypies are the residue of acts which, though once adapted, conscious, and voluntary, are now purely automatic. The original idea is often to be found in the hallucinations

and delusions, accompanied by profound emotional colouring, which occur in the early period of the disease. "Professional" acts also frequently form the basis of subsequent stereotypies, but some automatic movements must be regarded as of fortuitous origin.

Although the secondary forms imply a more advanced stage of disease than the primary, they nevertheless may occur comparatively early, often contemporaneously with the latter. This is analogous to the co-existence in a tissue of inflammation and sclerosis.

Secondary stereotypies tend to become reduced in number as time goes on, those remaining being usually those first formed.

### 3. *Clinical value.*

To preserve the value of stereotypy as a clinical sign, the meaning of the word must be strictly limited. A repeated action is not stereotypy if it is still joined to an idea. Acts committed under the influence of obsessions, the conjurations of paranoia, etc., must therefore be excluded.

Stereotypy is far commoner in dementia præcox than in other forms of mental disease. Primitive stereotypies are more frequent in katatonia, secondary in hebephrenia and dementia paranoides. Stereotypy serves to distinguish the excitement of dementia præcox from that of manic-depressive insanity and general paralysis. It occurs early in dementia præcox, late in systematised delusional insanity. It is also of service in distinguishing the terminal stages of dementia præcox from other terminal dementias.

As regards prognostic value, secondary stereotypies are of grave import; in primary stereotypy the outlook is less gloomy, especially if other signs of active katatonia are present. Nevertheless, in the so-called "cured" cases of dementia præcox a tendency to stereotypy persists. This tendency may be utilised in teaching the patients simple machine-like occupations.

BERNARD HART.

*On the Phobias [Des Phobies]. (Prog. Méd., August 11th, 1906.) Terrien.*

The thesis put forward in this paper is that the phobias or obsessional fears are not invariably symptomatic of the condition of degenerescence, but may also, though no doubt more rarely, originate from hysteria. In support of this view the author briefly records twelve observations of phobias—six in hysterical patients and six in non-hysterical degenerates. In the hysterical variety the onset of the symptom is usually sudden, and it can, indeed, be induced in a typical form by suggestion, and is very amenable to treatment by the same method. The phobias of the degenerate, on the contrary, are slow in their evolution and are almost always refractory to every method of treatment.

W. C. SULLIVAN.

*The Time of some Mental Processes in the Retardation and Excitement of Insanity. (Amer. Journ. Psych., January, 1906.) Franz, S. T.*

To what part or parts of the nervous system may we refer the increased and decreased psychomotor activity usually found in depressed-maniacal insanity (in Kraepelin's sense)? Six subjects were chiefly used in the research—two normal, two depressed (retarded), two exhilarated—all willing, and some anxious, to do their best in the tests,

which were carried out at intervals during a period of fifteen weeks. The tests were made as simple as was consistent with accuracy, and covered time of rapid tapping, time of simple reaction to sound, time of choice reactions to sound, rapidity of reading, etc. When the results of all the experiments are considered, the excited patients do not show any consistent increase in speed over the normal or the depressed, indicating that the maniacal condition is not increased motor ability, but merely increased motor diffusion. The retarded subjects were slow at the beginning of all the series, but in the more complex mental processes (involving choice) they took proportionately a shorter time than for simpler acts. The maniacal patients tended to keep the normal relations. In the retarded patients there was considerable improvement with practice, tending to show that such patients may be improved by systematic exercise. The author believes that if the retardation is due to lowering of irritability, such lowered irritability is not in the brain, but rather in the peripheral parts of the body, particularly the nervous system. In only a few cases are the average variations for the insane greater than for normal subjects.

HAVELOCK ELLIS.

*On the Growth of Nails in States of Mania and Mental Depression* [*L'Accrescimento Ungueale nella Frenosi Maniaco-depressiva*]. (*Ann. di Freniat.*, June, 1906.) *Falciola*.

Dr. Falciola has collected a large number of papers upon the growth of the nails and the changes noted after disease, which he has tested by his own observation. He is not disposed to agree to the assertion of Parisot and Paget that the state of the nails is an index of trophic alterations in the body, although he admits that their growth is affected by a general disturbance in the economy of the organism. He found that in melancholy the growth of the nails is slower. The increase of the nails is somewhat irregular, being greater at one time than another, and differing in each finger, although there is a general equality in growth, which is more marked in the three middle fingers. The nails of one hand do not grow at exactly the same rate as in the other. He fails to find either marked acceleration or slowness of growth in states of mental depression or mania. In general he finds that the study of the growth of the nails in insane patients appears to support the views of Kraepelin on the clinical unity of all those types of mental disease which writers generally wish to treat as distinct, but which, in truth, only represent different episodes of one fundamental malady.

WILLIAM W. IRELAND.

*On Insanity from Occupation* [*Berufspsychosen*]. (*Psychiatr.-Neurol. Wochenschrift*, Nos. 17, 18, and 19, 1906.) *Hellpach*.

Under this title Dr. Willy Hellpach, of Karlsruhe, includes some studies of the mental derangements which beset men's callings. The conception in these three essays seems better than the execution. He has nothing new to say about the "Cæsarenwahnsinn," the insanity of power. It appears that in Germany the apothecary is regarded as often eccentric and abnormal. Dr. Hellpach observes that the strain of responsibility in which apothecaries exercise their calling is liable to



produce a nervous state which is frequently complicated with the abuse of alcohol and morphia. I am not aware that such peculiarities have been noticed amongst apothecaries in Great Britain, nor am I surprised that the pharmaceutical journals in Germany have protested against this honourable profession being so libelled by Dr. Hellpach.

The author is more successful in his study of collectors. As he remarks, it is very common in young persons to make collections of one kind or another. The desire to collect seems to be the main thing, the object only a means to gratify it. With the cares of life this taste passes away or is kept under; but in a few instances making a collection of curiosities becomes a passion which people will gratify at the expense of the welfare of their family, and in disregard of moral and legal considerations. I knew a worthy clergyman of antiquarian tastes who used to say "All collectors are thieves." Several bold pieces of robbery under the desire of acquiring relics of antiquity are known to me. Dr. Hellpach asks, Is fanatical collection the cause of this mental perversity or is it only the expression? He does not decide the question, though he evidently leans to the affirmative.

The collection of trifles is a very common habit in lunatic asylums.

The actor is very liable to have his mind deranged by his vocation, which leads him to throw his thoughts and feelings into a mental world not his own. The capacity to do so is no doubt born with him, but the reaction upon his own character increases with his employment. The boundary between the original and the artistic *ego* becomes effaced and the assumed character has an unhealthy action on the mind like a foreign substance on the body. The author points out the resemblance between acting and hysteria; in fact, hysterical girls are born actresses, and delight in making an exhibition of their feelings. The mental derangements of actors have been very well treated by the late Dr. W. A. F. Browne in a paper which deserves to be reprinted.

WILLIAM W. IRELAND.

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## 5. Treatment of Insanity.

*Sedatives and Narcotics in the Treatment of the Insane.* (Dublin Journ. of Med. Sci., September, 1905.) Cullum, S. J.

This paper is the reprint of a thesis read by Dr. Cullum for the Degree of M.D., Univ. Dubl., July, 1905.

The writer remarks at the outset that from the myriad sedatives and narcotics available at the present time a very small number may be selected that are really serviceable. The modern treatment of the insane is opposed to the extensive use of drugs, and the perfect sedative, which shall be harmless, rapid in its action, easily administered, and not giving rise to habituation, remains to be discovered. The drugs we have at present at our disposal may be roughly classified as general sedatives, pure hypnotics, drugs lessening reflex irritability, and motor depressants.

(1) The *general sedatives* useful in the treatment of the insane are

sulphonal, trional, and cannabis indica. The first is very insoluble, and therefore very slow in its action, but precisely for this reason it is useful in certain patients suffering from motor excitement—noisy, dangerous, and unmanageable. Hence sulphonal is largely used in asylum work, but from its tendency to accumulate it must be used with great discretion. Trional is more soluble, and therefore more prompt and also more transient in its action than sulphonal. Being much more expensive, it is less used in pauper asylums. Cannabis indica is a powerful but uncertain sedative in noisy, irritable, and fractious patients, especially senile demented. (The author omits to discuss the question whether the uncertainty of this valuable drug is not chiefly due to variations in its quality. It is much to be regretted that the search for the active principles of Indian hemp has not been more successful.) In acute mania the drug sometimes calms when all else has failed.

(2) The *pure hypnotics* discussed by Dr. Cullum are paraldehyde, alcohol, veronal, and chloral hydrate. Drugs of this class are pre-eminently needed in the treatment of the sleeplessness almost invariably present in the early stages of insanity. A useful caution is, however, given by the writer, who points out that in many cases if no drugs are given natural sleep returns on the third or fourth night after the patient is admitted to the asylum, and as he justly says, "this natural sleep is well worth the waiting for." But should it fail to appear the use of hypnotic drugs is inevitable. Of pure hypnotics, in Dr. Cullum's opinion, paraldehyde "takes an easy first." The principal drawback of the drug is well known. It has a nauseous taste and smell, and as it is very volatile, and is excreted by the lungs, the breath of the patient taking it has a characteristic odour. So much is its taste disliked that after the first dose the nasal or oesophageal tube has, in asylum practice, commonly to be employed in its administration. But the natural character of the sleep which it induces, and the improvement in mental condition and appetite which follows its use, lead the writer to prefer it, notwithstanding these drawbacks, to all other hypnotics. In the insane he employs doses far larger than those mentioned in the pharmacopœia, two drachms as an initial dose, rising to four or six drachms, and in selected cases even as much as an ounce. Its effect is increased and its action is hastened by the admixture of an equal quantity of brandy or whisky. Alcohol in the form of toddy, containing one ounce of brandy or whisky, is considered by Dr. Cullum to be a most useful occasional hypnotic in the irritable sleeplessness of senile demented. Veronal, with the use of which we have become widely familiar during the year and a half since the thesis under review was compiled, receives favourable mention from the writer. Its price, however, is high, and when given continuously it unquestionably gives rise to ataxia and to other symptoms of accumulation. Its principal use is in the sleeplessness common in the early stages of melancholia. In mania it is practically useless, its action being too slow, whereas paraldehyde in the doses above mentioned will commonly insure sleep in a few minutes. Of chloral hydrate Dr. Cullum has nothing new to tell us. He considers it especially useful in acute alcoholics, here best combined with bromide, in paroxysms of excitement and sleeplessness occurring in epileptic

patients, and, above all, in the *status epilepticus*, in which it should be given by rectum in double the ordinary doses.

(3) *Drugs lessening reflex irritability*.—The drugs treated of in this section are the bromides and opium. The writer's account of the bromides relates chiefly to their use in epileptic cases. Opium he has come to use exclusively in the form of the tincture, and that in considerable doses. He thinks that there is one type of melancholia, and one only, in which the use of opium is advantageous. These are cases occurring in either sex, above the climacteric age, and affected with premature atheromatous changes in the arteries; they are depressed, restless, noisy, and frequently exhibit active and distressing delusions. The state of cerebral irritation is presumed to be due to atheroma of the cerebral arteries, this disease being obviously present in the peripheral blood-vessels. In large doses (3ij in twenty-four hours for an initial dose) opium dilates the peripheral vessels and lowers general blood-pressure, and at the same time in the cases described there is great improvement in the mental condition, and the management of the cases becomes much easier. The drug is given at intervals only, not continuously, to avoid habituation. The writer rightly insists on the more *even* sedative effect produced by laudanum *per os* as compared with morphine administered hypodermically. Finally, in cases of recurrent mania with regularly occurring periods of excitement and exaltation the writer employs a mixture of morphine and chloral hydrate "with the most beneficial results."

(4) *Motor depressants*.—In this class Dr. Cullum alludes to two drugs only, *viz.* hyoscine and tincture of hyoscyamus. He has nothing new to tell us regarding the use of the former drug in cases of violent mania. He cautions against the use of a larger initial dose hypodermically than  $\frac{1}{200}$  of a grain, and has seen death result from  $\frac{1}{100}$  of a grain. Tincture of hyoscyamus is indicated in cases difficult to manage on account of a large "moral" element in the insanity, and more especially in women, who are worse in this respect during the catamenial periods. A drachm or two drachms should be given at bedtime, often advantageously combined with other hypnotics.

Dr. Cullum concludes his thesis with a number of maxims derived from his experience of the use of sedative and narcotic drugs in the insane. The most important of these are the following:

When giving any such drug frequently, make repeated physical examinations, and pay particular attention to the ratio between waste and repair, as shown by the weight-record.

When insomnia is associated with delusions of a visceral nature keep watch for actual disease of the organ supposed by the patient to be affected.

Dispense with all sedative and narcotic drugs as far as possible, since all have a deleterious effect on the tissues of the body.

Never give a hypnotic in the daytime.

M. EDEN PAUL.

*General Therapeutics of Mental Disorders* [Journ. de Méd. de Bord., October 15th and 22nd, 1905]. Régis, E. (Extracts from the chapter on the above subject in Dr. Régis' *Précis de Psychiatrie*.)

The methods of treating mental disorders are classified as: (1) General

Methods, all of which are various modes of *isolation* of the patient, his removal to a fresh environment; (2) Physical Methods, comprising (a) rest in bed (or *clinothrapy*), (b) *balneotherapy* and *hydrotherapy*, (c) *electrotherapy*, (d) *massotherapy*; (3) Surgical Methods, comprising (a) *operations*, (b) *counter-irritation*, (c) *venesection*, (d) *serotherapy*, (e) *gastric lavage*; (4) Pharmaceutical Methods (including the employment of animal extracts). The following matters are either novel or of especial interest in the author's detailed discussion of these various methods.

Dealing with general methods of isolation and change of environment, he lays considerable stress on the danger, already pointed out by Esquirol, of sending to asylums under an error of diagnosis those transient forms of toxæmic insanity which are due to some acute infective disorder, to alcoholism, or to grave organic disease. In this connection the following recommendations are made:

(1) It is absolutely necessary that a medical man, before signing a certificate, should satisfy himself that the mental disorder is not due to acute specific disease.

(2) Postpone sending the patient to an asylum if he has pyrexia or albuminuria, if he is suffering from asystole or other grave organic disease, or if he is in a condition of advanced cachexia.

(3) Be prudent above all with regard to certification of cases of hallucinatory confusion of mind with nocturnal excitement.

(4) Exercise caution in certifying persons of advanced age, who are commonly affected with serious organic lesions, and many of whom exhibit delirium only as a result of pulmonary, cardio-vascular, or renal disease.

(5) There is a definite need for the foundation of special institutions for the reception of cases of acute delirium—the delirium of infective fever, of intoxication, of senile cachexia—which can no longer be kept in their own houses. Thus we should avoid the necessity for the certification of persons either suffering from a speedily curable disorder or destined to early death.

Perhaps the most interesting section of the paper under consideration is that devoted to the use of *prolonged baths* in the treatment of mental disorder—immersion for many hours, many days, even several weeks. Special arrangements are needed in these cases for the regular renewal of the water of the bath, for the provision of food and sleep, and for immediate succour should malaise or syncope result.

It seems that patients, even when much excited, submit readily to prolonged bathing. They sometimes get out of the bath, but since those of either sex are dressed in a long bath gown with flowing folds, their movements out of water are incommoded and they are chilled by the wet cloth, and they are often glad to get back into the water as soon as possible. The skin does not suffer from the prolonged immersion beyond maceration of the thick skin of the palms and soles—and this even can be, to a large extent, avoided by keeping the skin rubbed with oil. On the other hand, it is definitely asserted that excited patients are calmed, and that sleep is promoted, by the baths. Various temperatures have been recommended, ranging from 82° to 97° F. Success for this treatment has been claimed more especially in cases of maniacal excitement. On



the other hand, a discussion on prolonged bathing took place at Rennes in August, 1905, and the majority of the alienists who took part in it condemned the treatment on the ground that it was, in fact, *a form of mechanical restraint worse than the straight waistcoat*, and a means whose employment could not be justified by trifling hypothetical therapeutic advantages.

The author quotes Letulle and others, who give extremely favourable reports of the effect of *cold baths* in cases of *delirium tremens*. Letulle (1896—1899) employed baths at a temperature of 64° F., in which the patient remained until calmed, an immersion lasting six to twelve minutes commonly having this effect. In many cases violent delirium suddenly gave place to perfect lucidity. The great danger is excessive fall of temperature. The duration of the bath should never exceed a quarter of an hour, and the patient should be very carefully watched. After removal from the bath he should be well rubbed and wrapped up in a blanket. Salvant, who has also employed this method with success, regards it, not as a merely symptomatic and empirical mode of treatment, but as one rationally based, which strikes at the cause, by preventing the auto-intoxication on which the delirium depends.

M. EDEN PAUL.

*Psychotherapeutics: Suggestion and Persuasion* (Rev. *Scient.*, February and March, 1905). Bernheim.

This is a reply to recent criticisms of his books, *De la Suggestion et de ses Applications à la Thérapeutique* and *Hypnotisme, Suggestion, Psychothérapie*, and a reaffirmation of the doctrines enunciated in these works. In Bernheim's view, "all the phenomena classified as mesmerism, animal magnetism, braidism, hypnotism, etc., are no more than a normal faculty of the human brain, varying in intensity and mode of manifestation in different persons, namely, *suggestibility*—that is to say, *capacity of the brain to receive an idea, and a tendency on the part of the brain to transform that idea into an action*. This is a physiological peculiarity of which we are able to avail ourselves independently of suggested sleep or the hypnotic state. . . . We have to do, not with hypnotism, but with suggestibility; not with an exceptional state, found only in exceptional organisations, but with physiological qualities inherent in the normal brain." . . . "Every idea awakened in the brain, every phenomenon of consciousness, is a suggestion; . . . every idea has a tendency to realise itself in action." The last proposition embodies Bernheim's *Law of Ideodynamic Transformation*. On the views thus epitomised are based what Bernheim regards as the two principal recent advances in psychotherapeutic procedure: first, the recognition of the fact that suggested sleep—i.e., hypnotism proper—is not a necessary part of psychotherapeutics; and, secondly, the proof that suggestion has a large share in producing the beneficial results obtained from *all* therapeutic measures; for, as he says, "anything and everything competent to arouse in the brain directly or indirectly the psychical image of healing, constitutes a therapeutic suggestion."

The critics to whom Bernheim is replying in the paper under review are Dubois, of Berne (*Les Psychonévroses et leur Traitement Moral*), and

MM. Camus and Pagniez (*Isolement et Psychothérapie ; Traitement de l'Hystérie et de la Neurasthénie ; Pratique de la Rééducation Morale et Physique*). The criticism offered is largely based upon the view that *suggestion* is an improper psychotherapeutic method, and that *persuasion* is the only psychic influence which it is permissible to employ: "suggestion makes its way along the tortuous paths of insinuation, persuasion addresses itself loyally to the reason of the patient; the one appeals to a blind faith, the other to accurate ratiocination." If the dispute was as purely verbal as this at first sight appears to be, it would hardly be necessary to allude to it; but the attack further involves the assertion so often made that the suggestive method substitutes another's control for that of the patient's own will, and thus weakens his quality as an independent agent. There may be some justice in the latter allegation as regards the subjects of the hypnotic exhibitor; but it can hardly be said to apply to the proper employment of psychotherapeutic suggestion. Moreover, Bernheim appeals to facts of observation; and he declares it to be such a fact that in suggested sleep, however profound, pure automatism is never observed. And the frequent discussions as to the possible use of hypnotic suggestion for criminal purposes have clearly established that there is a strong tendency to resist suggestions which are not approved of by the moral consciousness of the subject. In fact, as Bernheim says, the moral consciousness in such cases makes counter-suggestions, which inhibit the subject from acting on those of which he disapproves.

The author reports a number of interesting cases in which psychotherapeutic suggestion was the principal curative measure employed; several of these confirm his assertion that to employ verbal persuasion alone, addressed to the patient's reason, is "to restrict within far too narrow limits the scope and the efficiency of psychotherapeutics."

Persuasion, continues Bernheim, is, in the ordinary sense of the term, the introduction of ideas into the brain of another by the intermediation of speech. It is, in fact, one of the modes of suggestion. *Suggestibility*, in cases in which verbal persuasion is employed, depends upon two elements: first, the aptitude of the brain for the reception of the idea—that is to say, the *credivity* of the subject; secondly, the aptitude of the brain for the transformation of the received idea into action—that is to say, his *ideodynamic excitability*. One of his critics, M. Dubois, has asked why he says *credivity*, and not *credulity*. In answer, he draws a valuable distinction. We all possess a certain degree of credivity, which impels us to believe what is affirmed to us, without demanding in every case rational or moral proofs of the truth of the affirmation. And the faculty is a most important one in human social life, for without it there would be no tradition, no history, no business, no social intercourse. Imagine the consequences if we should demand logical proof when informed by a trusted friend that our house is on fire or our child in the act of drowning, before proceeding to summon the fire brigade or to run to the child's rescue! In the absence of definite proof the mind would remain fixed in a condition of philosophical suspense—to believe without credivity would be as impossible as to see without vision. *Credivity* is a normal faculty of the brain. When it is exercised in excess, it is called *credulity*. The distinction between

credivity and credulity is that between a physiological and a pathological state. Moreover, since there are two elements in suggestibility, namely ideodynamic excitability in addition to credivity, it does not follow that one who exhibits credivity to the pathological degree—who is, in fact, credulous—is therefore of necessity extremely suggestible; he may be lacking in ideodynamic excitability, so that the idea suggested to him is not translated into action. On the contrary, in a subject in whom the ideodynamic excitability is strong a very moderate degree of credivity will lead to the active acceptance of a suggestion. And this is why suggested sleep—the hypnotic state—though not indispensable to the therapeutic employment of suggestion, is yet often advantageous; in the mental isolation thus produced, ideodynamism is often far more active, and the subject's suggestibility is greatly enhanced.

In the latter part of his paper Bernheim answers certain other criticisms which have been repeatedly directed against the "Nancy school" in general and himself in particular. "I have been reported as having said that suggestion is everything, that electrotherapy, hydrotherapy, massage, and even *materia medica*, act only by suggestion, that the most diverse therapeutic procedures are nothing, but that the human imagination is everything. I never said anything so absurd. I said, not that suggestion is everything, but that suggestion has a share in everything. And it is precisely because no attempt has, as a rule, been made to determine how great is the share that suggestion has had in the cure, that the reports of different authors regarding the therapeutic value of other methods of treatment are so vague, so confused, and so conflicting." Again, to the accusation that he has declared that suggestion will cure everything, Bernheim replies that he has never asserted that suggestion will kill the *Bacillus tuberculosis*, that it will arrest the development of locomotor ataxia, that it will cut short an attack of enteric fever, or that it will cure pulmonary emphysema. But what he has repeatedly asserted, and what he now reiterates, is this, "*that suggestion, psychical treatment, is directed towards the relief of the psychical element in disease; and that such relief can be given when we have to deal with a mere functional and auto-suggestive disturbance, a disturbance not arising from any organic toxic or infective change in the brain, such as meningitis, uræmia, or degeneration of brain-tissue. These latter conditions are not amenable to psychotherapeutics. But the most diverse maladies can give rise to a psychoneurotic disorder, to a simple reflex disturbance without lesions; such a factor may constitute the entire disease, it may outlast an organic disease which has given rise to it, or it may accompany such a disease and modify or exaggerate its symptoms.*"

The control of this functional psychoneurotic element in disease is the province of psychotherapeutics. M. EDEN PAUL.

## 6. Pathology of Insanity.

*Hæmatoma Auris in the Insane* [*Otæmatoma nei malati di mente*]. (II *Manicomio, anno xxi, No. 3, 1905.*) Baccelli.

In a short review of the literature of the subject the author refers to

the observations of Pellizzi, who in 1892 isolated from the fluid contents in four cases of hæmatoma auris a micro-organism morphologically similar to the *Streptococcus pyogenes*, which he regards as the pathogenic agent in this condition. Subsequent investigations have given discordant results, some observers confirming Pellizzi's views, while others have either failed to discover any organism constantly present or have found the fluid entirely sterile.

As a contribution to the settlement of the question Baccelli has made a bacteriological examination in three cases. In two of the observations, one a case of senile melancholia and the other diagnosed as the catatonic form of dementia præcox, the hæmatoma followed a blow on the ear; in the third case, occurring in a cerebropathic idiot, there was no evidence of injury. Repeated culture experiments were made on the usual media with the fluid contents and with scrapings from the wall of the tumour, but in every instance the results were negative. Inoculation of the fluid on the guinea-pig's ear, with and without preliminary bruising, also failed to produce any inflammatory reaction. In two of the cases a microscopic examination was made of the skin over the hæmatoma, and it was ascertained that the blood-vessels showed evidences of chronic inflammatory and degenerative changes.

W. C. SULLIVAN.

*Contribution to the Study of Cerebral Morphology in the Criminal* [*Contributo allo studio della morfologia cerebrale nei delinquenti*]. (*Arch. di Psichiat.*, vol. xxvii, fasc. i-ii, 1906.) *Tovo*.

This paper contains a fairly full account of the morphological anomalies observed in the cerebrum of a criminal whose brain is preserved in the Museum of Criminal Anthropology at the University of Turin. Beyond the statement that the subject was twenty-five years of age at the time of his death, no particulars are given regarding his history. Of the unusual characters noted in the surface anatomy of the cortex the most important were: (1) lessened obliquity in the direction of the fissure of Rolando and relatively smaller development of the pre-Rolandic cerebrum; (2) presence of a third horizontal sulcus in the frontal lobe; (3) deep situation of the first annectant occipital convolution and resultant distinctness of the external occipital fissure, reproducing the appearance of the Affenspalt (4) interruption of the ascending frontal convolution in two places by transverse sulci; (5) interruption of the fissure of Rolando at the junction of the upper third with the lower two thirds, an annectant convolution at this point joining the ascending parietal to the ascending frontal. The first three anomalies were visible on both sides, the fourth and fifth in the left hemisphere only. The author emphasises the atavistic significance of these characters, particularly of the Affenspalt appearance in the occipital lobe and the interrupted fissure of Rolando, and founds on their presence in the brain of a criminal an argument in favour of the doctrines of the Lombrosan school. The paper is illustrated by two photographs which show very satisfactorily the anomalies described in the anterior region of the brain but are rather blurred towards the occipital pole.

W. C. SULLIVAN.



*On Changes in the Bones in General Paralysis* [*Ueber Knochenveränderungen bei progressiver Paralyse*]. (*Cbl. für Nervenheilkunde u. Psychiat.*, Sept. 15th, 1906.) Reichardt.

Dr. Reichardt had occasion to observe general paralytics who suffered from spontaneous fractures. The bones were found to be light and porous. He does not think that this condition is owing to marasmus, or lues, or general weakness, but to be the result of the affection of the brain and spinal cord in general paralysis. There is no doubt, he observes, that changes in the condition of the bones attend some nervous diseases—for example, in hemiatrophia facialis progressiva, and in the deficient growth of the limbs in porencephaly, and the occurrence of spontaneous fractures in uncomplicated tabes and syringomyelia. The question may be asked what part of the nervous centre may be held to influence the growth or diseases of the bones. Reichardt is disposed to localise this function in the medulla oblongata. He entirely dissents from Gudden's remark that fractures in asylums are owing to external violence; no doubt with greater care their numbers may be lessened, but with such alterations in the structures of the bones spontaneous fractures will occur. This fragile condition is not common in the bones of cranium. The author combats the assertion that general paralytics have unusually heavy brains and thick skulls, but he has observed that where there are persistent frontal sutures and Wormian bones there are often unusually heavy skulls, owing to osteosclerosis, or to thickening with normal specific weight. He has observed general paralysis in two microcephales. He denies the assertion that, in atrophy of the brain, there is an accommodative concentric thickening of the cranial vault. At the end of his article, he prints a letter from Professor Schmidt, of Strasburg, who holds that in thickening of the skull it is impossible to distinguish whether this was owing to a natural or diseased process.

WILLIAM W. IRELAND.

*On Artificial Atrophy of the Brain and Skull* [*Experimentell erzeugte Gehirn-Atrophie und damit verbundene Schädel-Atrophie*]. (*Cbl. für Nervenheilkunde u. Psychiat.*, Aug., 1906.) D'Abundo.

Professor G. d'Abundo, Director of the Clinique for Nervous and Mental Diseases in the University of Catania, published, in 1901, some researches on atrophy of the brain. Since then, he has been making experiments upon new-born dogs and cats, in which he practised openings of the skull. He found that, when these lesions extended to the white matter, the growth of the brain as well as that of the skull was diminished. With lesions on one side, there was hemiatrophy, though the growth of the whole brain was affected. The result of the experiment induces him to believe that the skull ceases to grow after the brain is affected in infantile life, and not, as some people have imagined, that the deficient growth of the skull hinders the increase of the brain.

WILLIAM W. IRELAND.

## 7. Sociology.

*The Problem of Responsibility* [*Examen de Quelques Questions Touchant la Responsabilité*]. (Rev. de Psychiat., July, 1906.) Toulouse and Crinon.

Will is "the resultant at every moment of a person's tendencies and ideas," as constituted by the environment in conjunction with the subject's own organisation. By virtue of this organic factor of will, enabling a choice to be made among the directions presented, the individual may be said to be psychologically free. Even if this psychological factor be not held sufficient to involve freedom, it is still necessary, from the social point of view, to postulate freedom. On this basis responsibility exists when—(1) there is a sufficient consciousness of the act and its consequences and (2) a sufficiently powerful and ordered voluntary effort.

The authors do not undertake to define the nature of crime or of the social reaction against it, though on this point they appear to be in harmony with the modern positivist school, and they remark that the protection of society is much better guaranteed if, instead of regarding "punishment" as a method of correction, we regard it as "above all a measure of treatment."

As responsibility is based on lucidity of consciousness and capacity for voluntary effort, which vary as we pass from normal to abnormal individuals, punishment (if the word is still to be used), to be just, must vary correspondingly, according to the psychological conditions. Thus it comes about that the medical expert is asked to declare the state of an individual's "responsibility."

At this point there is a division of opinion. Some authorities assert (and it might have been added that the assertion has never been disproved) that the idea of "responsibility" is not a medical or even scientific conception, that the medical expert who expresses an opinion on this matter is going beyond his own field, since he is only justified in stating the actual medico-psychological facts which he can find in the individual presented to him. The authors do not share this opinion, and consider that they have solved a difficult question with the very dubious assertion that "the problem of penal responsibility is a psychological problem." If that is a fact, it is a fact of which psychologists themselves seem to be ignorant. So far, however, as our authors are concerned the difficulty is mainly verbal; if we substitute for "examination of the responsibility of criminals" the phrase "examination of the mental state of criminals"—which is what Toulouse and Crinon are really concerned with—the difficulty falls away and the conclusions of the authors may be accepted with unqualified approval.

The current methods of psychiatric observation, they declare, are altogether insufficient, being superficial, narrow, and involving no elements of exactitude. It is by the systematic application of experimental methods that we can alone learn precisely how far an individual is abnormal in intelligence and aptitude for voluntary effort, how far he is capable of education, and what treatment he requires. Italy, the authors believe, is now leading the way along these paths, and they refer especially to the medico-legal methods used by Tamburini.

A purely psychiatric preparation no longer suffices to equip an expert in this field, the author concludes. It is necessary, but is not sufficient; familiarity with the methods of the psychological laboratory is also required. This is all the more important since criminals must not be divided beforehand into vicious and insane. Every inculpated person should be examined by an expert. This is necessary, not merely to discover those who are, in the ordinary sense, insane, but for the more difficult and important end of ascertaining how far those who are not technically insane are susceptible of medico-psychological treatment. The authors incline to think that all criminals should receive sentence (although their actual presence in court might in some cases be dispensed with); for it is for the judge, representing society, to determine what persons are in their present condition unfit for society, but for all serious offences the indeterminate sentence is the only one that should be permitted. In all cases, also, there should be a preliminary period of observation before the method of treatment is decided and the offender classed. The prison must be a hospital. The medical expert, however, would remain only an expert, and it would be for the judge to sanction or not his recommendations. Not all these ideas, the authors remark, are yet realised, but they are meeting with less and less opposition, and it is becoming generally recognised that simple criminals and insane criminals are not essentially different.

The paper is a clear and vigorous presentation of some of the most recent tendencies in alienism as it affects criminals.

HAVELOCK ELLIS.

*A New Classification of Criminals founded on Psycho-pathology* [*Nuova classificazione dei delinquenti fondata sulla psicopatologia*]. (Il Manicomio, anno xxi, No. 3, 1905.) Ingegneros.

Defining crime as "a human action which transgresses the conditions of the struggle for existence that are normal to the social milieu," the author considers its scientific study under three aspects: (1) the etiology of crime; (2) clinical criminology, investigating the forms of delinquency and the characteristics of the criminal; and (3) the therapeutics of crime.

The causes of crime are of two orders, endogenous or biological, and exogenous or dependent on the social or physical environment. The study of the former class constitutes criminal anthropology, which is again divisible into criminal psychopathology and criminal morphology. The investigation of the exogenous factors of crime, which is the province of criminal mesology, is also to be considered under two heads—*viz.*, criminal sociology, which deals with the causes belonging to the social environment, and criminal meteorology, which has to do with the influences of the physical environment. The two orders of factors are always associated in the causation of crime, but in proportions that vary widely in different cases; in the instinctive criminals and the insane criminals, for instance, the predominance of the biological factors is evident; while in the category of the occasional criminals the chief part belongs to the influence of the environment.

Of the three modes of function under which the psychic activity,

itself one and indivisible, becomes manifest, namely the intellectual, the emotional, and the volitional, one or other is usually predominant in the individual personality, and determines the type of character. In the criminal the anomaly of character, which is revealed in conduct, may be predominant similarly in one or other of these modes of function. Classified on this basis the psychopathic disorders of the criminal may be represented in this scheme :

*Moral anomalies (dysthimias).*—Congenital : congenital criminals or moral idiots ; acquired : habitual or morally perverted criminals ; transitory : occasional criminals.

*Intellectual anomalies (dysgnosias).*—Congenital : criminals from constitutional mental defect ; acquired : criminals from acquired insanity ; transitory : drunkards and other forms of toxic insanity.

*Volitional anomalies (dysbulias).*—Congenital : impulsive epileptics ; acquired : impulsive chronic alcoholics ; transitory : criminals from passion.

To these three groups, which represent pure types, it is necessary to add a fourth, formed by the combined types in which the loss of functional balance affects more than one psychic sphere ; thus we have sensitivo-intellectual criminals in whom ethical defect is associated with intellectual defect, and volitional-intellectual criminals who are lacking in power of inhibition at the same time as they are intellectually feeble, while again we meet with cases of extreme degeneration in which impulsiveness, absence of moral sense, and intellectual weakness co-exist ; these latter represent the psychologically complete type of the criminal.

W. C. SULLIVAN.

*Relationships between Somatic Anomalies and the Educational Capacity of the Senses in the Defective* [*Rapporti fra i caratteri anomali somatici e l'educabilità dei sensi nei deficienti*]. (*Arch. di Psichiat.*, vol. xxvii, fasc. i-ii, 1905.) *Montesano and Selvatico-Estense.*

This very valuable paper is based on an exhaustive study of fifty mentally defective children (thirty males and twenty females) in the asylum of Santa Maria della Pietà at Rome. The method pursued by the authors was to establish in each case on the one hand the number and character of the somatic anomalies, and on the other the degree of educational aptitude for the senses of sight, touch, and hearing, and then to compare the two series of data. Adopting with slight modification Morselli's classification, they divide the physical anomalies into (1) those of a properly degenerative type, recalling conditions found normally in the lower races or in the primates—such, for instance, as “l'oreille en anse,” the lemurian apophysis, the prehensile foot, etc. ; (2) those of a mixed or dubious character, probably for the most part of pathological origin, but by some counted among the atavistic stigmata, such as platicephaly, oxycephaly, the Gothic palate, etc. ; and (3) those of distinctively pathological nature, depending either on such dystrophic processes as cause facial symmetry, strabismus, etc., or on constitutional diseases of which rickets is the most important, or on accidental circumstances such as injury at birth or in childhood, meningo-encephalitis, and so forth.



To investigate the degree of educability experiments were made to ascertain (1) how far the child could be got to recognise qualitative and quantitative differences in sensory stimuli; (2) what degree of effort was needed to elicit such recognition (*i.e.*, whether it occurred spontaneously or only with forced attention, or only when the recognition was associated with the satisfaction of appetite, as when sweets were hidden in the object to be identified); and (3) the facility with which the terms expressing shades of difference were acquired and retained in the memory.

The salient facts are set out in detail for each case, and the results are analysed from different points of view in a series of elaborate tables which do not lend themselves to condensation.

The conclusions which the author puts forward are summarised as follows:

(1) A complete, or almost complete, educability of the senses is possible in a defective child even when the child presents a considerable number of somatic anomalies. In one case, for instance, with nineteen such abnormalities the educational aptitude was complete.

(2) A complete educability is also possible when the subject presents a large number of atavistic stigmata.

(3) It is also compatible with the presence of any one of the more notable atavistic stigmata and with a high degree of such stigma.

(4) As an indication of slight degree or total absence of educational aptitude the dystrophic or constitutional signs have generally more significance than the atavistic. Thus with the diminution of educational aptitude there was a regular increase of the percentage of subjects with a predominance of the stigmata of the former class.

W. C. SULLIVAN.

*A Morphiamaniac on Trial for Murder: a Medico-legal Study of the Matthews Case. (Alienist and Neurologist, vol. xxvii, No. 3, August, 1906.) Crothers.*

The case reported in this paper is of peculiar interest as illustrating in morphia intoxication the same medico-legal problems that so often arise in connection with alcoholism. The subject of the report, a medical man, *æt.* 35, was accused of the murder of his wife. He was known to have been a drug-taker for many years, and about two years before the alleged crime he initiated his wife into the morphia habit. Their relations appeared ordinarily to be very good, and on the day preceding her death their manner towards one another was marked by its usual friendliness. The following morning a friend called at the house and found the woman in a semi-comatose condition, which the husband explained by stating that the night before she had taken a quantity of strychnine tablets with suicidal intent, and that as a remedy he had been giving her quarter-grain doses of morphia every half-hour. The case was regarded as one of morphia-poisoning, and remedies were applied accordingly. The husband, who was slightly under the influence of the same drug, obstructed the treatment in a silly manner, tried to persuade the physicians to leave him alone in the room with his wife, and, failing in this, attempted surreptitiously

to give her a hypodermic injection. His manner throughout was confused and irrational, and after his wife's death he made puerile attempts to bribe the doctors to certify that death was due to natural causes. When arrested he showed the same irrational and unconcerned demeanour. The hypodermic syringe taken from him was found to contain a mass of white powder, which after a cursory examination at a drug store was pronounced to be strychnine. Subsequent analysis proved that it was morphia without a trace of strychnine. No *post-mortem* examination of the woman's body was made. The family history of the accused showed a strong neuropathic taint, his paternal grandmother having been insane, while on his mother's side one uncle died insane, an aunt suffered from some convulsive disease and was burned to death in a fit, and two other relatives committed suicide. The accused was delicate and erratic as a child, and presented further evidences of instability at adolescence, constantly changing from one occupation to another before finally adopting medicine. While studying medicine he made an almost successful attempt to commit suicide. From the time of his starting in practice he was known to be addicted to the use of drugs, especially of morphia; and it had been noted for several months that his physical and mental condition had greatly deteriorated, and that he had developed an extreme instability of temper, oscillating from torpor and indifference to irritability and impulsiveness.

Despite the medical evidence as to the effects of the chronic morphia habit on the man's mental state, the Judge charged that consciousness of wrong-doing would involve responsibility, and that if there were any blunting of the moral perceptions due to the intoxication, such incapacity would not excuse the crime, because the intoxication was voluntary. Dr. Crothers, who has been one of the foremost champions of the forensic recognition of automatism in intoxication, comments with just indignation on this reactionary attitude. The prisoner was convicted of murder in the second degree, and sentenced to twenty years' imprisonment.

W. C. SULLIVAN.

*The Responsibility of Hysterics* [*A propos de la responsabilité des hystériques*]. (*Journ. de Méd. de Bordeaux*, September, 1906.) Régis, E.

There is an extreme variability in the mental state of hysterics, and one must therefore assume a parallel variation in the degree of responsibility to be attributed to these patients. The most satisfactory theory is that of "attenuated responsibility," which alone allows a place in criminology to the numerous intermediaries between the completely sane and the undoubtedly insane. It is often maintained that the practical application of this theory leads to results inimical to society. This is not so. What is dangerous is the present judicial use of the principle whereby punishment is diminished, while no adequate consideration is given to the question of public security. The solution of the problem is the placing of the partially responsible in special institutions distinct from both the prison and the asylum.

BERNARD HART.

## 8. Asylum Reports.

### *Some English County and Borough Asylums.*

*Derby Borough.*—The admission rate seems here to show a tendency to become less. Dr. Macphail, as usual, gives the average respite experienced by those who have been readmitted after discharge on recovery. Last year this average for nine cases was six years and eleven months. We wish that more would give these particulars, and, if possible, add the form of mental disorder on the preceding and the present attacks. Such information over a large area would not only be helpful in discussing the various problems connected with the incidence of insanity from the administrative point of view, but would do good by stirring up scientific inquiries into any marked differences in results in various areas. General paralysis shows a large diminution in the admissions. The duration of these cases seems from the figures to be longer than usual, the deaths and admissions both being 5, while the remainder on December 31st is 19.

*Derby County.*—Curiously enough, at Mickleover the figures relating to general paralysis read just the other way, the admissions being 16 and the deaths 25, while the remainder is but 5. Dr. Legge notes that more than a third of the admissions were returned as being suicidal. Though more intimate knowledge of some cases removed them from this category, yet the remainder formed an unusually heavy charge. We do not ever remember noting an earthquake as an incident in asylum life, but one was felt at Mickleover.

*Dorset.*—Dr. MacDonald is able to point to a falling admission rate for county cases, which he considers to be particularly satisfactory in the midst of recognised distress from want of employment. We much appreciate the very full particulars in Table 1 in regard to the numbers of private patients and out-county cases. Such fulness is essential to the tables of all asylums where considerable batches of private cases are dealt with.

*Glamorgan.*—A feeling of deep regret is kindled in handling the Report of this asylum. It seems very sad that after many years of subordinate work here Dr. Stewart should have been spared for so short a period of full control. His death is a great loss to the service of the locality, following as it does closely on the resignation of Dr. Pringle, and the Association likewise has reason to deplore the loss of an earnest and courteous member. The medical part of the Report is rendered by Dr. Finlay, who is by no means a new-comer to Bridgend, and whom we congratulate heartily on his succession to the superintendency. He reports that "religious excitement" is responsible for 21 admissions, 14 being men and 7 women. This recrudescence of an old trouble in Glamorgan may be attributed to recent religious revival. The latter, however, has had apparently some influence in reducing the amount of alcoholic insanity admitted. The two

influences together, though varying for the year, account for about as many as they did last year. Hereditary predisposition was found in nearly 50 per cent. of the religion cases. Solariums have been instituted, and, though they have only been in use for a short time, they promise to be of advantage in the treatment of tuberculous diseases.

*Middlesbrough.*—In commenting on a notable decrease in admissions from the borough, Dr. Geddes writes: "The decrease in the number of admissions from the borough is unusual, and therefore remarkable, and leads one to seek an explanation of it. It may be that the trade depression from which Middlesbrough has suffered, and which may presumably have been partly responsible for the increase in the admissions in last and previous years, now operates as a cause of the decrease, in that, having in the first place swept into the asylum the weaklings—those most prone to mental degeneration—it has left a hardier class—those whose nervous systems are more able to withstand the stress of a strenuous existence. Again, the same factor may have acted by driving from the town an appreciable proportion of the class from which our patients are drawn. It is melancholy to reflect upon the fact that whereas 'hard times' tend to decrease the incidence of insanity, prosperous times and high wages tend to keep our asylums well filled." The general paralytics provided nearly half the deaths.

*London County Council Asylums.*—The volume issued by the Council does not decrease in size nor in interest and value. As we have said before, in all parts of the Report there is evidence of intense earnestness and intention to take up worthily a great, continuous, and increasing responsibility. The Committee gives figures to show that though there is, as must be expected, an absolute increase in the number of patients, that increase has been for two years past a diminishing one. But it is wise not to attempt to draw any conclusions from such a meagre period. At the same time, the same tale is told in many other places, and our impression after reading many asylum Reports for the year is that there is less urgent demand made for accommodation over the country. The Committee again refers to the inconvenience of having two important bodies regulating the insanity of one area. It shows that while in the last sixteen years it has increased its percentage of total accommodation for the insane of all kinds by 10·91, the percentage of that provided by the Metropolitan Asylums Board has decreased by 8·34. The workhouses and friends receive now a smaller proportion than they did. Then in one of the tables it is shown that some parishes have many more in asylums of one Board than in those of the other. The Committee seems to be justified in concluding that the explanation of the inconvenient arrangement must be found in the method of certification. We believe that we have in former pages hinted at the same thing, but it is not so long ago that in a legal investigation it was shown that relieving officers had a freedom of choice as to where patients should be taken that could not be supposed to make for the most efficient utilisation of available room. It is stated in the Report that 4201 applications for beds were received, while only 3627 were allotted during the year. The admissions to the Committee's



asylums seem to be also on the descending scale, but of course without knowledge as to what Leavesden, Caterham, and similar asylums are doing no certain conclusion can be drawn about the occurrence of insanity in the area. A curious fact is pointed out: the proportion of the chargeable insane on the north side of the Thames is 5'66 and 4'69 on the south side, in each case per mille. The explanation suggested is that the more crowded areas which are typically lunatic-producing are to be found to the north of the river. The readmissions of patients discharged as recovered bear a percentage in the recoveries of between 27'42 and 29'18 during the last eleven years when the recoveries during the whole of those years are taken into consideration. But of the recoveries during the same eleven years between 11'74 and 13'47 were readmitted within twelve months of their discharge. It would be of immense service if the original form of mental disease in these relapses could be given and summarised. We are very glad to see that the Committee has resolved to adopt the scheme of statistical tables now brought out by the Association. It is possible that in some respects these tables are open to criticism; in fact, it is inconceivable that with such extensive and intricate points to work up and decide there should be complete agreement as to the best method of dealing with such a complex subject; but harmony is preferable under any circumstances to discord, and we feel sure that if the tables are worked in each asylum in general harmony the lunacy statistics of London will acquire a value that they never have had and that cannot be surpassed elsewhere. The Committee points to the undoubted necessity of getting reliable information as to causation, and complains of the paucity of information supplied by the authorities of Poor Law infirmaries when patients are transferred from them to the asylum. This should not be, and it would not be if those responsible woke up to the fact that the heaviest burden that comes on the rates can only be successfully attacked by getting to the root of the matter. Curiously enough, what appears to us to be the best suggestion for meeting the difficulty comes from one of the Committee's own officers, Dr. Stansfield, who thinks that an experienced medical officer could well be allocated to this work for two years or so.

Building still goes on apace. The Report contains useful drawings of the new Long Grove Asylum, to which Dr. Bond has been lately appointed, to the hearty contentment of the Association. His appointment may be taken as a practical endorsement of the Association's choice of him to follow Dr. Robert Jones. One principal feature of the design of Long Grove is the employment for the main building of connecting passages simply covered and not enclosed. There are many villas included in the plan, which, in general, follows Messrs. George T. Hine & Co.'s lines. At Bexley a hospital is being built for male admissions. At Colney Hatch several villas are being planned to take the place of the unhappy iron buildings. These are all to be specially allotted, chiefly to diseases—phthisis, dysentery, general infirmities, etc.—and one for acute cases. An eleventh asylum is called for, and preparations are being made for its erection. This is to be built on the vacant space at Horton. On the part of that estate which has been allotted to Long Grove a considerable

amount of work has been executed in the shape of gardens, etc., by a body of the "unemployed." It was not to be expected that the value per man of these workers should be as great as would be the case with outdoor labour, but there must be some benefit attaching to the system when looked after properly.

With regard to the financial side of the management of their huge trust the Committee has taken what appears to us to be a very wise step in suggesting that the services of the Council Comptroller should be given towards independent audit and checking of accounts, stores, etc. It will take a large amount of responsibility off the shoulders of the Committee, while the checking by a professional checker cannot but tend to close, economical, and honest work. At the same time, the Committee points out that the powers of report which the Finance Committee of the Council propose to ask for will not absolve the Committee itself from fulfilling its statutory duty to the Guardians from whom the maintenance rates are called up by it.

The Commissioners' reports are now for the first time grouped together, instead of being put under the head of the respective asylums. There is nothing in them calling for special comment.

The reports of the Medical Superintendents are grouped in the same convenient manner. In them are points of interest as follows:

At Bexley Dr. Stansfield has had a complete personal and family history made, as far as possible, in each of the 494 admissions. In practically three fifths a complete history was obtained, in another fifth the history was only incomplete, and in the remaining fifth no history at all could be obtained.

Dr. Stansfield finds that out of the 302 histories 56·9 showed either insane or neurotic history, and he is satisfied that even this large proportion falls short of the truth.

"There is a floating mass of degeneracy in the population which is constantly augmented by the victims of social vice and its satellites, syphilis and drink, and from this mass we derive the bulk of our asylum population, fill our prisons, and supply our 'unemployable'; and that this is increasing at a faster rate than the normal population is, I think, indicated by the statistics of the Lunacy Commissioners as to the relationship of certified insane to the total population, which show that the increase of population in the nine years ended January 1st, 1905, was 10·8 *per cent.*, whilst that of the number of certified insane has been 24·2 *per cent.* in the same period. I believe that one important factor in the disproportionate increase is the lowering birth rate of practically all classes except these degenerates."

He points out that the upper and middle classes are driven by motives of ease or economy to limit production, while the degenerates care not for consequences. We do not think that perhaps the most mischief is done by degenerates marrying or cohabiting with degenerates. The more this occurred, the greater would be the tendency to extinction of the class. It is the half-degenerate marrying either his equal or even his superior that will in the end produce a larger number of undesirables. He hints at the question of sterilisation becoming more pressing. Sterilisation is a splendid abstract principle, but the application thereof to practical purposes is many generations off. There is a very extensive

etiological table given by him that would rejoice the heart of the late Statistical Committee. The correlations of fifty-six factors with each other are set out and form an interesting study. Another very useful table gives the factors which were assigned on admission of those cases which recovered. Very full statements and correlations of the causes of death are likewise produced.

Dr. Robert Jones also adverts to the history difficulty. "The difficulty of obtaining full and correct 'family histories' in cases of insanity can only be fully appreciated by those engaged in the work. Such histories are fragmentary and often apocryphal, and when obtained are difficult to classify. The fact that the human organism is a series of complex units, and that each of these may be either dominant or recessive, shows the necessity for a scheme of classification in regard to heredity which will give the history of collaterals as well as of ascendants."

He emphasises the importance and quantity of the training work done among the attendants, and he quite rightly points out that the higher the scope of such training the more likely is it that the brighter minds will come in under it.

Dr. Bryan alludes to the unfortunate murder case at Horton, which has already been dealt with by Dr. Mercier (October No., 1905, p. 790, *et seq.*).

"The jury said that they 'desired to add a recommendation that care should be taken that such letters as those written by the woman should not be allowed to go out of the asylum.' The learned Judge said 'that he was most anxious in any remarks he made not to say a word against any individual, and he was sure the jury did not mean to cast any reflection on any individual. The letters, however, should not have got out, and the proper authorities should make careful inquiries into the matter and see that it did not occur again.'

"The question of the suppression of patients' letters has always been a difficult one, and the modern practice in this respect is, and rightly so, to give the unfortunate patients the fullest facilities for writing to their friends, and, indeed, it has even been questioned by the highest authorities whether any patient's letters whatsoever should be suppressed. Apart from this altogether, letters written by the patients to their friends are of great value as affording them information as to their state of mind, and all former experience would have tended to show that the receipt of letters of similar character to those in question would have produced even increased care and vigilance on the part of friends when visiting. It is extraordinary that, although the contents of the letters were apparently known to the relatives, other than the husband, no information was given by them that these letters were having any effect on him, and no request was made that they should not be sent. In any case, however, the question of interception of patients' letters is approached by every asylum medical officer with the greatest care, and only those who are intimately connected with asylum management can form a correct judgment in the matter. I see no justification in suppressing a letter from a wife to her husband, who, as has been well said, has surely a right to know from her letters in what state of mind she is, and in this opinion I am supported by my colleagues throughout the country."

At the Colony Dr. Bond has prepared some special tables which afford valuable information about his epileptic charges. With regard to hereditary predisposition, we are somewhat surprised to see that in the cases where history could be got of the antecedents of parents and grandparents the proportion of those relatives in the ascending line who had been insane or epileptic to those who had been neither insane nor epileptic is as 19 to 185. The proportions for the parents only are—for the father 7 to 42, for the mother 4 to 40. We should have looked for more evidence of direct transmission. Apparently the two disorders have about equal causative value, while heredity of alcohol ranks at about half of either. Personal alcoholism was found in about 18 *per cent.* In the larger number of the cases the duration of epilepsy previous to admission was considerable, more than half being over fifteen years. But of course this might be an accident depending on the selection of the cases for admission. Apart from congenital cases, about two thirds of the admissions were those whose epilepsy commenced before the age of twenty. Dr. Bond gives a full table of correlations of etiological factors on the lines of the Association's Table B, 8. In time value must attach to this as supplying means for ascertaining what effect (if any) is caused in the incidence of factors by the prevalent element of epilepsy.

Dr. Mott's pathological report is in the main a record of facts, and does not contain the suggestive remarks on moot points which have conveyed valuable teaching in former years. He analyses in considerable detail the death returns and the *post-mortem* findings at Claybury. We attach much value to a table in which he shows all the notable pathological appearances that were discovered *post-mortem* in the cases examined. This table and the formal record of a single cause of death (presumably the primary) in each case, together bear some comparison with the new system of recording the etiology of the insanity admitted; we have one principal and as many associated factors as may be found. It is thought that the new system of death return, divided up in the same way into principal and contributory, will tend to obviate inconvenience and possible error. The Report before us shows us an instance of possible error. In the first *single cause* table, out of the 186 deaths only 5 are returned as due to general paralysis. Yet the second table shows pathological appearances of general paralysis in 43 cases, which latter total corresponds, after allowance for a different commencement of the year of record, with that given in the old Statistical Table 5 on a later page. Taking the former table, as one very well might under present circumstances, as the true guide to the principal cause of death a reader might quite erroneously conclude that Claybury received very little general paralysis. No doubt the apparent want of harmony arises from the old high-and-dry question as to what primarily killed a man—the grave but remote or the recent and otherwise insignificant. The ejection of the terms “primary” and “secondary” in favour of “principal” and “contributory” will surely make things easier to the scrupulous certifier. In 98 out of 185 cases no sign of tubercle was found in either acute or obsolescent form. Very full tabulation is provided for ascertaining the history of each asylum for several years past in the matter of dysentery. In time to come these records must prove to be



of immense value in tracking down this fugitive malady of uncertain genesis. The returns of last year show some recrudescence at Bexley.

In the report of Mr. Clifford Smith, the engineer, we note, among other matters, that he valued at £1166 the labour of patients placed at his disposal by Dr. Stansfield at Bexley. He states that the standard of interior repair is being more effectively maintained by reason of such labour being available, and he looks for a reduction in the cost of such repairs in the course of the next few years. He finds that the new pumping plant at Colney Hatch has delivered water at 3d. per 1000 gallons, this sum including repairs to machinery. It is about  $\frac{1}{2}$ d. under his estimate. At the central station the 1000 gallons cost about 6 $\frac{1}{4}$ d., after knocking off the rates, taxes, and insurance.

The average weekly maintenance per patient in the county asylums works out at 10s. 11 $\frac{1}{2}$ d.

The Committee refers with great regret to the retirement on account of ill-health of Dr. Alexander from the control of the Hanwell Asylum, which he has held for many years. The Association will feel the same regret, we are assured. A full pension appropriately backs up the kindly words in which the Committee speaks of his service.

*Somerset (Cotford).*—The most noticeable matter in this Report is the production of the year's statistics mostly in the new tables adopted by the Association, and we must congratulate Dr. Aveling on his being the first of the English county and borough asylum superintendents, as far as we know, to tackle the system. It must have meant a large amount of trouble to work all the material up before the way was cleared by new registers and other means. Of course it is quite too early to review or criticise the changes in tabulation which the Committee supposed would be followed by advantage. There are fresh points, however, that may repay consideration. For instance, in the table showing the duration of particular forms of insanity on admission before death intervened, it is curious to find that the record of longevity attaches to a congenital with epilepsy who counts over fifty years of mental deficiency and is followed by a case of acquired epilepsy of over forty-five years' insanity. The table from which this is taken (D 3) would appear to further the inquiry into the "expectation of life" in insanity, of which a good deal was heard when Sir William Gowers started a debate on the subject.

*Stafford (Cheddleton).*—The Commissioners note that in 173 deaths no bed-sore was found *post mortem*. Again we say that no record of general nursing can possibly show anything better than this evidence of care bestowed day by day and night by night on paralysed, resistive, and apathetic mortals in asylums like this. Dr. Menzies, after careful inquiry, is enabled to attribute almost 50 *per cent.* of the admissions to social vice, comprising syphilis and alcohol. In 144 cases in which a history could be taken the former contributed twenty-seven and the latter thirty-five instances of direct causation. In discussing the incidence of tuberculosis, Dr. Menzies gives the result of careful examination of 647 cases, in many of which several examinations have taken place. Positive physical signs of tubercle were found in 123 and doubtful signs

in 133. A large number were injected with Koch's old tuberculin "with the surprising result that only 8·8 *per cent.* failed to give positive reaction." A parole navy gang has been organised among the convalescent patients, which has been most successful. These men work, for the final month or so before recovery, the ordinary full labourer's hours without the supervision of an attendant, but under the general instructions of the foreman ganger. They begin the day with a good meat breakfast, and have other privileges, especially that of going home from Saturday to Monday. Consequently, when they are discharged they are already in good training for hard labour instead of being fat and flabby.

*East Sussex.*—After several months of complete immunity from dysentery, a female patient who had been in the asylum for a year developed this disease, which ran a rapid course to death. No other case occurred within reasonable time either before or after, and Dr. Taylor considers that a case with such a history as this suggests that there must be some other method of contracting the disease besides direct infection. He is convinced that the only way to prevent outbreaks is the immediate and permanent isolation of any case that has been once attacked. The satisfactory recovery ratio, which would have been greater but for the removal of private patients before recovery was actually established, is attributed to the hospital permitting more individual attention being given to recent admissions. The appointment of a training mistress for the children has proved a considerable success, the work, which is carefully graduated to the intelligence of each child, apparently serves to slowly develop what understanding there may be.

*Worcester.*—Here, too, the Commissioners note the entire absence of bed-sores. Dr. Braine-Hartnell divides, quite properly we think, the hereditary etiological influences into two: direct, which he terms "hereditary influence," and indirect or family predisposition. The ratios for these respectively are 12 and 18 *per cent.* He adds a column of ratios of incidence for all causes, which is very useful. Among the admissions were two little girls, *æt.* 4 and 5. There must be something wrong if no more appropriate place than the asylum can be found for such little tots.

*Wiltshire.*—Here there has been a steady fall in the admissions for the past five years, those for last year being 141 against 189 in 1900. This has not resulted from the insane of the county being detained elsewhere, with friends or in the workhouses, etc. Dr. Bowes notes that the type of the insanity on admission tends less to the maniacal and more to the delusional, the prospects of recovery being correspondingly prejudiced. He entirely declines to take on nurses from other asylums, and he thinks that if all superintendents pursued the same practice beneficial discouragement would be given to the spirit of restlessness which all deplore among the junior female staff. Being asked by his Committee to make a report on the insanity of the county in relation to the needs for accommodation, Dr. Bowes goes into the matter in a separate document. His Report contains some interesting points. The population of the county has increased by about 3½ *per*

cent. in the ten years 1891—1901, while the insanity in the same time has increased 20 *per cent.* The most remarkable increase is in the large borough of Highworth and Swindon, where, while population increased in the ten years about 25 *per cent.*, the number of the chargeable insane was more than doubled. One would think that a careful inquiry on the part of the local authorities might lead to some suggestion of a cause for this. At all events, some approach could be made to a decision as to whether the increase was due to administrative reasons, such as longer detention or greater inpouring of senile demented, or, on the other hand, to actual increase of occurring insanity. It is possible to think that as this is a town that has grown under the eyes of many still living, that as it is a town that has grown rapidly but evenly under satisfactory hygienic circumstances and that as in it exists a continuous industry which forbids anything like distress to the bulk of inhabitants, a thorough inquiry into the history of each case from year to year for some time back would amply repay the trouble taken.

We are quite with Dr. Bowes when he makes the following suggestion, and we hope that should it be accepted in his time he will do his best to keep the hospital sacred to mental disease, and not let it be muddled up with physical infirmities. In speaking of chronic demented he says :

“For these and other reasons one cannot but feel they are better off in large institutions containing special arrangements conducive to their future good; but in place of building special institutions for their accommodation, the right and apparently preferable course to adopt would be to appropriate existing asylums to the housing of the incurable class, and the provision of small mental hospitals, equipped with every appliance and convenience, for the treatment of acute mental disease. Special hospitals now exist for nearly every special disease, and that it will come to the establishment of such hospitals for the treatment of insanity, one of the most to be deplored of all diseases, there can be no doubt.”

#### *Some Registered Hospitals.*

*Bootham Park.*—Dr. Hitchcock relates with gusto that on last Boxing Day he saw a man whom he thought to be a stranger sitting by the fire in one of the wards, smoking his pipe with the patients, and seeming to be very pleased with himself and his surroundings. He turned out to be a former patient, who lived some forty miles away. He had given his men a holiday, and finding it dull by himself, had come over to spend the evening with his old friends. He also finds that ten of his nurses and nine of the servants have left to be married in the last two years. His head attendant has been presented with the Asylums Workers Association's gold medal for forty-four years' good service. Other attendants have put in thirty-seven, thirty-three, twenty-nine years, etc. We should imagine that there are elements of comfort here for both patients and staff. The recovery rate is high on both sides—sixty-nine and fifty-seven.

*Wonford House.*—The Committee and Dr. Deas are to be much congratulated on the last payment in extinction of a heavy debt having

been made during the year. Some time back we adverted to the burden thus thrown on the management. The amount so released will be available for increasing the already large amount of assistance given to the needy insane. The Committee refer in generous terms to the fact that Dr. Deas has now given them twenty years' splendid service. Referring to the large proportion of melancholia cases which he took in last year, he adverts to the unsatisfactory nature of the cases that are both insane and hypochondriacal. He had eight of them with suicidal tendencies. This is the chief difficulty; with purely melancholic cases we know where we are; they must always be treated as such. But with the other class, especially when we suspect that a good deal more than necessary is being made of the illness, it is quite easy to be deceived as to the reality of the tendency to self-destruction, attempts at which are generally the result of a fit of temper.

*The Retreat, York.*—Scarlet fever is always a most unpleasant visitor in an asylum, but is more so when the Medical Superintendent is taken with it. This was Dr. Pierce's fate, he and four others falling to it on the same day. Thanks to strict measures, all did well, and no other case followed. As usual, rigid inquiry failed to discover the source of infection. We are glad to see that Dr. Pierce has worked out his statistics for 1905 on the new lines. He produces an almost complete set of the tables lately adopted. Dr. Pierce, like Dr. Robert Jones, finds that strict training tends to improve the standard of applications for employment, but chiefly because it discourages those who are not serious in their intentions.

#### *Some Scottish District and Chartered Royal Asylums.*

*Aberdeen (Kingseat).*—It is, indeed, most sad that after the writing of this the first Report of a new asylum, Dr. Angus should have been cut off in his prime; but the numerous entries made by his Committee and the Commissioners show that he has left behind him, as a memorial, an institution of a novel character that apparently leaves nothing to be desired in efficient and easy management. It is true that much the same ideas that are found at Kingseat are to be found elsewhere. *Alt Scherbütz* has impressed itself in other areas as well as in this; but it is something for the Committee to say that this new asylum on a new principle will cost but £250 per bed for land, buildings, equipment, etc. To this end Dr. Angus must have helped much. Then it is recorded that the cost of the staff is less than the average for Scotland in spite of the presumed relative expensiveness of the segregational system. The secret of this no doubt lies, as is pointed out, in the larger employment of women, who are content with less pay than that which their male colleagues accept. The general cost for other matters is not above the average. The future of this asylum will be watched with much interest, as it is the first of the kind that has been opened. The principal building is, of course, the hospital, which holds fifty of each sex. It is intended for the physically sick as well as for recent cases.



It appears to be admirably designed for convenient working. The only point of criticism that we offer (beyond, perhaps, a suggestion that it would have been advisable to give a separate entry to the ward for excited cases instead of a passage through that for the depressed) is the attachment of small infectious wards on each side to the building itself. We know that this is a common occurrence in Scotland, but we cannot believe that any amount of disinfectants would form an efficient barrier to the passage of microbes, say of smallpox, at such close quarters. These wards are but 20 ft. distance from other wards or a main corridor. We note that one of the Commissioners recommends that they should be used for cases of phthisis till they are wanted for their special purpose. He adverts to the desirability of segregating all tuberculous patients. What would occur, then, if the phthisical inhabitants of the wards were to be suddenly dispossessed by a fever case? One would think that it would be better to keep these wards for phthisis and to erect a small isolation hospital in the grounds. To one remark of a Commissioner visiting the asylum we must take exception. While praising the rigid economy of the Committee who had charge of the building, he states that the main cost of asylums, as of other buildings, is in the external architecture, and not in the finishing or furniture. This probably is the case in the North, but it certainly is not so in England. We know several of the later asylums farther South which have a quite unpretentious outside, but have cost much per bed. As we have pointed out not long ago, the final cost must be settled by the amount spent for good reason on outside matters, such as cottages, by the sinking of capital with a view to saving yearly repairs. Without a full statement of all "associated conditions" the price per bed is likely to be somewhat fallacious for purposes of comparison.

*Argyll and Bute.*—Here there is a steady fall in the admission rate. This has been going on since 1898. There does not seem, however, to be any notable decrease in the average number resident. Sixteen were readmissions after an average period of absence of four years and one month. It is not stated how many of these were recovered on the first discharge. In no case is alcohol assigned in any form as a probable cause.

*Crichton Royal Institution.*—The directors do the honour to Dr. Rutherford of stating that in his absence on account of severe illness they were unwilling to proceed with the important work of completing the new pauper asylum. No less than 10 *per cent.* of the admissions were those of voluntary patients, whom Dr. Rutherford encourages, while setting his face steadily against dipsomania cases. He asks himself the question whether the large number of patients that he sends out recovered are likely to remain well. He takes inheritance as the chief guide in that matter. He lost one old lady, æt. 96, after sixty years' residence. She was the last of those nominated by the original foundress of the institution. The recently provided sanatorium for tuberculous cases is held to have done good work in reducing the amount of that disease in the asylum. Dr. Rutherford finds that recovery among the pauper admissions is not only promoted but expedited

by the reception hospitals, into which the majority of cases go direct. There are only ordinary handles to the doors in these houses, no locks being used.

*Royal Edinburgh Asylum.*—Dr. Clouston, after a period of critical hesitation, announces in his Report his entire acceptance of the microbe theory of general paralysis evolved by Dr. Ford Robertson and Dr. M'Rae. Since he has had every opportunity of inspecting the work of these two pathologists on the spot, his adherence to the new belief will be taken as a valuable support to it, for many men who have neither time nor opportunity for examination themselves will be quite content to rely on Dr. Clouston's deliberate judgment. What a vista the theory opens up! Dr. Clouston with all justice claims credit for the work carried on for some years now by the Scottish Asylums Laboratory. He states that 20 *per cent.* of his pauper and 10 *per cent.* of his private admissions are traceable to alcohol, and he asserts that education is the best remedy for the evil. He recommends that children should be taught more of the effects of alcohol as a branch of knowledge that will help in future life. One has only to see the immense good done by voluntary bodies working among the young, such as Bands of Hope, to feel sure that the recommendation of a routine instruction in this matter is absolutely sound. The total of general paralytics admitted is very heavy—64 in 428, but the fact that females number 38 to 26 of the males must be a record.

*Glasgow (Gartloch).*—Fifty cases have been boarded out, and to that extent accommodation has been saved. But Dr. Parker points out the fact that this discharge of the quiet and harmless removes so much useful padding which would obviate much friction between irritable and excitable cases. He advocates the trial of a system of boarding out in village groups under proper supervision, so that a due proportion of these latter cases should be sent out for the good of themselves and their irritability as well as for that of those whom they would leave behind. The number of cases with active tubercle have diminished so much since the institution of a sanatorium that this building has been devoted to general paralytics and other such folk, while smaller isolation wards have been found elsewhere for the phthisical.

*Govan.*—A very noteworthy matter in this Report is the abolition of Table X of the old series and the substitution of what is practically a modified admission register devised by Dr. Watson. Though Dr. Watson states in his Report that these new registers (there being one for each sex) are intended to take the place of the etiological tables, they go very much further than this. Against the serial number of each admission are given, in the following order, age, date of admission, date of discharge, and death (if it has occurred before report, together with in the case of discharge the state of mind on discharge), social condition, form of insanity, heredity, associated conditions—(1) existent, (2) pre-existent. We have no hesitation in saying that this is a very great step forward. It is admitted that for purposes of scientific inquiry the ideal is a register giving certain information about each of a

class of individuals and letting those who care to do so elaborate the recorded facts. But to make the ideal generally convenient there must be use of certain terms of a certain individual value and meaning, all agreed upon generally. Now, Dr. Watson pointedly rejects "cause" and "etiological factors" and adopts "associated conditions." The Statistical Committee seems to have been more chary of rejecting all idea of etiology, but it apparently recognised that there were several "conditions" often accompanying insanity, which, though they might not be classifiable under strict etiology, might be taken to have some possible influence. A middle course is taken in the Association's tables therefore. It is possible that as Dr. Watson's register stands one might work its contents out on the lines of the new table B 8, but it would not be possible to adjust it to B 7, in so far that Dr. Watson avoids putting any etiological pre-eminence in value to anything, whether factor or condition. Can an expert never say that in any case a given factor—alcohol for instance—has been the chief element in a breakdown? We fancy that Dr. Clouston, for instance, has strong ideas on this point. If no attempt is made to confer a pre-eminence it follows that any given term must acquire a fixed value wherever it appears, unless specifically qualified. Dr. Watson has evidently felt this difficulty, for he almost invariably qualifies alcoholism as being excessive and continuous, moderate but continuous, and so on. As a fact, in looking over his long lists we note that in the great majority of alcoholic cases drink, in one or other degree, stands by itself as an associated condition. Does not this invite a reader to regard drink as being responsible for the breakdown in these cases? One would say that no other conclusion is possible. Then why should not the medical man who makes the return and has the facts and history before him take the responsibility of declaring that drink did in a certain number of cases act as the determining factor? And it is the same in all other directions; if no prepotence in individual cases is to be assigned to a given factor or condition, it must assume a constant value. It will follow that sooner or later all factors or associated conditions will have the same value in relation to each other—lowered health and drink for instance—one condition, one value. The only point for determination will be the frequency with which associated conditions recur in examining a series of cases. Taking the two conditions mentioned above, which is to be found more often in our patients, alcoholism or lowered health? And which is really the more important factor? Some differentiation between conditions is implied by the use of the terms "existent" and "pre-existent," but this does not seem to extend beyond the idea of time and cannot be of any service in the elucidation of causation, unless some non-natural meaning is to be read into the terms. Even this differentiation must lead to some confusion, because it would be difficult to say that the effect of, for instance, syphilis, mental worry, etc., began or ended at such a date as to be pre-existent and not to be existent, or the converse. We imagine that if these two terms were withdrawn the register would be at least as useful, and possibly less open to misreading. But still we venture to say that the register does not help to answer fully the question, How does insanity come? That is a question which will very properly demand from each and all of those who have knowledge

and opportunity every endeavour to find an answer. After all no one pretends that any answer of absolute accuracy can ever be given, but the world does think that asylum superintendents can get a bit nearer truth than it can itself, and looks for something like a definite opinion from each of us according to our lights. Few are more fitted to express such an opinion than Dr. Watson. One sympathises a good deal with those who find a conscientious difficulty in making an attempt with insufficient or questionable material to supply each case with a cause. But it is possible, we think, to begin at the other end and take causes or factors or associated conditions and endeavour to see how many fell under their influence and in what degree. If Dr. Watson, then, were to add to his register a simple statement that in such or such a proportion of admissions he believed that a particular condition, or event, had appreciable influence in bringing about attacks of insanity, then we think that his registers, plus such a statement, would very nearly approach the ideal. We are, indeed, very anxious that none of these remarks shall be considered as carping or depreciatory, for such an attitude would be highly improper in view of the thought and trouble which Dr. Watson must have given to devising and working out this, the most important private addition that has been made of late to our statistical inquiries.

*James Murray's Royal Asylum.*—The statistics of insanity are perhaps more lacking in precision of terms than are those relating to any other human affairs. Chief among the elastically uncertain stands the term "recovery." Yet on it depends the true history both in the positive and negative sense of our fight with the disease. Dr. Urquhart gives his interpretation of the term, and we consider that it is as fair and accurate as can be looked for :

"The number of readmissions (15) was unprecedented in the history of the asylum, and the number of those suffering from recurrence of mental disorder (22) was also disproportionate. In these observations the word 'recovery' is used to indicate those in whom there is re-establishment of mental soundness permitting of the return of the patient to his place in the world without requiring the care and supervision of others. The 'lucid interval' may prove to be of lifelong duration, it may last for years, or only for months. Doubts have been expressed regarding the propriety of liberty in many of these cases. It has been represented as a wrong to the lieges. This is a new phase of opinion. For many years we have been accustomed to accusations of undue detention in asylums, elaborate safeguards have been devised to protect the insane from that evil, and now the tide of opinion seems to be setting in the contrary direction. As the law stands there is no longer authority for the detention of a person after he ceases to be insane; and, in the great majority of cases, it would be an intolerable hardship to be detained indefinitely because of a possibility of untoward remote consequences. No doubt there are those, including many who have never been under custodial care, who should be limited in liberty of action under revised legal enactments; but the advocates of extreme measures will have to be content with less Spartan remedies than they formulate. The practice of discharge on recovery, or even on



improvement, may entail occasional hardships, but on the whole it is appropriate to existing conditions."

*Roxburgh.*—Dr. Carlyle Johnstone is to be congratulated on the completion of his male hospital, which with smaller additions and alterations on the other side will finally relieve him and the Committee from all the drawbacks of overcrowding. The hospital will contain ninety-five patients. Its cost, including furnishing, works out at about £216 per bed. The infirmary, designed for eighteen patients, will be staffed by night as well as by day with female nurses. The readmissions were fifteen out of sixty-six admissions. The average period of respite was nearly eight years, a longer absence than usual.

## Part IV.—Notes and News.

### THE MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

A QUARTERLY MEETING was held at 11, Chandos Street, London, W., on Thursday, November 15th, 1906, Dr. Robert Jones, President, in the Chair.

*Present.*—Drs. H. T. S. Aveline, Fletcher Beach, G. Fielding Blandford, C. Hubert Bond, David Bower, A. N. Boycott, F. St. John Bullen, James Chambers, W. C. Clapham, R. H. Cole, Maurice Craig, Thomas O'C. Donelan, F. W. Edridge-Green, F. H. Edwards, J. Alfred Ewan, C. H. Fennell, Bernard Hart, W. H. Haslett, H. E. Haynes, C. K. Hitchcock, G. H. Johnston, Robert Jones, Richard Legge, W. H. C. Macartney, P. W. Macdonald, A. MacDougall, T. W. McDowall, W. F. Menzies, C. A. Mercier, C. S. Morrison, H. Hayes Newton, E. S. Pasmore, R. N. Paton, M. Eden Paul, W. Rawes, G. M. Robertson, J. Scott, H. Smalley, R. Percy Smith, P. C. Smith, J. G. Soutar, R. H. Steen, W. C. Sullivan, T. Seymour Tuke, John Turner, Frederick Watson, L. A. Weatherly, E. B. Whitcombe, T. Outtersson Wood.

*Apologies* from Drs. J. F. Briscoe, T. S. Clouston, A. R. Turnbull, and A. R. Urquhart.

*Visitors.*—Drs. Purves Stewart and T. A. Williams (Washington, B.C.).

The minutes of the last meeting, having been printed in the *Journal*, were taken as read.

The President made feeling reference to the loss by death of the Association's former President, Dr. Oscar Woods, of Cork. He would be remembered as a distinguished and able past-President of the Association, and one who conducted its affairs with dignity. He was very friendly, and would be missed very much at the meetings. He (the President) had taken upon himself the responsibility of writing to his widow, on behalf of the members, to convey their sympathy with her in her sorrow. Mrs. Woods, in her letter of acknowledgment, said the death of her husband was an irreparable grief to her, coming as it did so soon after the loss of their eldest daughter, which occurred just previously to her husband's decease. The Association, he said, had lost also by death two other members, namely, Dr. Craddock of Gloucester, who was the President's old fellow-student at St. Bartholomew's Hospital, and was well known as an excellent asylum superintendent and administrator; and Dr. R. S. Stewart, of Glamorgan, one of the most promising of the younger members of the Association and a very ardent student of social science. The Council had decided to convey to the relatives of those gentlemen the Association's sympathy with them in their sorrow. The President said that he was also reminded that Dr. Spence, a former President, had met with great grief in the loss of his wife, who was personally known to the

President as an amiable and able lady. Those melancholy events had happened since the annual meeting, at which occasion he had been pleased to be able to state that for twenty years not one of the Association's Presidents had died.

*Statistical Tables.*—Dr. Hayes Newington announced that the new registers, as proposed by the Association and adopted by it, had received legalisation in England and Wales by having been laid on the table of the House for a sufficient time. The forms were therefore now statutory in this country, and no doubt members of the Association would receive information from the Lunacy Commissioners on the subject.

*Election of new members.*—The following candidates were elected ordinary members of the Association (Drs. R. H. Steen and D. J. Thomson acting as scrutineers): Baird, Harvey, M.D., Ch.B.Edin., Assistant Medical Officer, London County Asylum, Colney Hatch (proposed by W. S. Seward, Robert Jones, and H. Hayes Newington); Clague, Henry John, L.R.C.S., L.R.C.P.Edin., Assistant Medical Officer, Glamorgan County Asylum, Bridgend (proposed by J. McGregor, H. Hayes Newington, and Robert Jones); Eager, Richard, M.B., Ch.B.Aberd., Assistant Medical Officer, Devon County Asylum, Exminster (proposed by Arthur N. Davis, H. Hayes Newington, and Robert Jones); Fielding, Saville James, M.B., B.S.Durh., Bethel Street, Norwich (proposed by D. J. Thomson, S. J. Barton, and R. H. Steen); Forster, Reginald Arthur, M.B., Ch.B.Aberd., Assistant Physician, The Royal Asylum, Aberdeen (proposed by H. de Maine Alexander, H. Hayes Newington, and Robert Jones); Fortune, John, M.B., Ch.B.Edin., Senior Assistant Medical Officer, Devon County Asylum, Exminster (proposed by Arthur N. Davis, H. Hayes Newington, and Robert Jones); Harman, George James, L.R.C.P.&S.Edin., L.F.P.S.Glasg., Assistant Medical Officer, County Asylum, Chester (proposed by A. Lawrence, G. H. Grills, and Robert Jones); Leggett, William, B.A., M.B., B.Ch.Dubl., Assistant Medical Officer, Kent County Asylum, Maidstone (proposed by H. Wolseley Lewis, H. Hayes Newington, and Robert Jones); Lowry, James Arthur, M.B., B.Ch., B.A.O., R.U.I., Assistant Medical Officer, Middlesex County Asylum, Napsbury (proposed by T. J. O. Donelan, A. E. Patterson, and H. R. Steen); McDowall, Colin Francis Frederick, M.B., B.S.Durh., Assistant Medical Officer, City Asylum, Newcastle (proposed by T. W. McDowall, Mary O'Brien, and G. R. East); Moore, Francis Joseph, L.R.C.P.&S.Ireland, Assistant Medical Officer, London County Asylum, Banstead, Sutton, Surrey (proposed by D. Johnstone Jones, Robert Jones, and H. Hayes Newington); Phillips, Nathaniel Richard, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, London County Asylum, Banstead, Sutton, Surrey (proposed by D. Johnstone Jones, Robert Jones, and H. Hayes Newington); Rowan, Marriott Logan, B.A., M.D., R.U.I., Assistant Medical Officer, Derby County Asylum, Mickleover (proposed by Richard Legge, A. C. Nash, and Bedford Pierce); Scanlan, John, L.R.C.S.Edin., Assistant Medical Officer, Devon County Asylum, Exminster (proposed by Arthur N. Davis, H. Hayes Newington, and Robert Jones); Sievwright, Henry Gates, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, Monmouth Asylum, Abergavenny (proposed by J. Glendinning, H. Hayes Newington, and Robert Jones); Turner, Frank Douglas, M.B.Lond., M.R.C.S., L.R.C.P., Medical Officer, Eastern Counties Asylum for Idiots, Colchester (proposed by C. Caldecott, H. Hayes Newington, and Robert Jones).

#### REPORT ON THE INTERNATIONAL CONGRESS ON THE CARE OF THE INSANE, HELD AT MILAN IN SEPTEMBER, 1906.

The PRESIDENT said it would be within the recollection of members that an International Congress on the Care of the Insane was held at Milan in the autumn. Dr. Percy Smith was a member of the committee in England to arrange for papers to be read and for inviting a certain number of British members to take part in the Congress. Dr. Percy Smith was present at that gathering, he held several meetings at his house preparatory to the Congress, and papers were prepared by members of our own Association and were read at Milan. Dr. Percy Smith had kindly consented to communicate a short account of the Congress and its doings.

Dr. PERCY SMITH then read a report of the proceedings at the Congress.

## PRESENTATION OF AN ILLUMINATED ADDRESS TO THE PRESIDENT.

Dr. OUTTERSON WOOD said that before passing to the consideration of the next item on the agenda, he would like to ask the attention of members to a matter of which no notice had been given. When Dr. Jones was elected President of the Association, it conferred upon him the highest honour it was in its power to bestow. But it was felt that some further recognition was due to him for his long and valuable services as General Secretary. It was accordingly resolved that he be asked to accept some more tangible proof of the very high appreciation entertained by the members of all the excellent work done by him during the past nine years. And it was decided that it should take the form of an illuminated address on vellum. Unfortunately, it was not ready in time for the last meeting, but he had now much pleasure in presenting it, on behalf of the Council and members whom the President had so well and faithfully served. They trusted that as the ever-rolling tide of time bore him along to what it was hoped would be, for him, a happy and prosperous future, he would look upon that token of regard and esteem, and remember with feelings of satisfaction the sincere and hearty good wishes of every one of his fellow-members which accompanied it. (Applause.)

(Dr. Outtersson Wood then handed the address to the President.)

The PRESIDENT said, in response, that he felt deeply touched by the very kind remarks which had just been made by Dr. Outtersson Wood concerning his (Dr. Jones's) services to the Association. He had no idea that anything of the sort was either on foot or was about to be presented to him, and therefore it had come as an extremely happy surprise to him. He was quite certain he did not deserve it. (No, no.) He had arrived, through members' kindness and consideration and confidence in him, at the highest point of honour which the Association could confer, and he could only say that in his own humble way he would endeavour to do justice to their choice. He could say that for nine years he had not missed a single meeting of the Association or a single Council meeting, with the exception of one annual meeting—that at Cork, which he was unable to attend owing to what was known in the asylum service to require his special attendance, *viz.*, an adjourned inquest, which happened to be fixed for the particular day of the Association meeting. From the bottom of his heart he thanked Dr. Outtersson Wood and the members generally for the kind way in which they had considered his very humble services. He would be able to keep the address with feelings of very considerable pleasure and satisfaction, and he would not forget the very kind words in which the presentation had been made. (Applause.)

Dr. R. WELSH BRANTHWAITE (H.M. Inspector under the Inebriates Act) read a paper entitled "Drunk and Disorderly," which was subsequently discussed by the President, and Drs. G. H. Savage, Outtersson Wood, Mercier, Scott, Sullivan, Seymour Tuke, G. M. Robertson, Crochley Clapham, and Tom A. Williams (Washington, B.C.).

Dr. PURVES STEWART contributed a paper, illustrated by lantern slides and a microscopical demonstration, on "Diagnostic Value of Examination of the Cerebro-Spinal Fluid." It was discussed by the President and Drs. D. J. Thomson, Cole, and Mercier.

## REPRESENTATION OF THE ASSOCIATION ON THE ROYAL COMMISSION UPON THE CARE AND CONTROL OF THE FEEBLE-MINDED.

The PRESIDENT stated that at the meeting of the Council that day the extension of the scope of this Royal Commission was considered and four names of members of the Association were selected for submission to the Home Secretary, with a request that one or more of them should represent the interests of the insane, through the Medico-Psychological Association, on the Commission. He thought that some medical superintendents of asylums might be preparing evidence for submission and would be interested in knowing that the Council continued to be active in all matters concerning the welfare of the insane.

In the evening between thirty and forty members and their friends dined at the Café Monico.

At the Council meeting, which was held at 1.30 p.m., the following members

were present : H. T. S. Aveline, Fletcher Beach, C. Hubert Bond, David Bower, F. St. John Bullen, James Chambers, Maurice Craig, Sam. Edgerley, J. A. Ewan, Robert Jones, P. M. MacDonald, T. W. McDowall, H. F. Hayes Newington, Bedford Pierce, G. H. Savage, R. H. Steen, D. G. Thomson, John Turner, and T. Outterson Wood.

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### SOUTH-EASTERN DIVISION.

The Autumn Meeting of the South-Eastern Division was held, by the courtesy of the Governors, at the Bethel Hospital, Norwich, on Wednesday, October 17th, 1906.

The members present were Drs. M. T. Archdall, Saml. Barton, N. J. H. Gavin, C. Rodney Huxley, Sydney H. Long, C. A. P. Osburne, D. G. Thomson, and R. H. Steen (Hon. Sec.)

Apologies were received from Drs. Robert Jones (President), Outterson Wood, Ernest W. White, Tidbury, Haynes, Crookshank, and Kidd.

The wards and grounds were inspected, and subsequently Dr. Fielding entertained the members to luncheon.

The minutes of the last meeting having appeared in the *Journal*, were taken as read and confirmed.

The invitation of Dr. Taylor to hold the spring meeting of the Association at the East Sussex County Asylum, Hellingly, on April 17th, 1907, was unanimously accepted with much pleasure.

Dr. JAMES FIELDING, in place of reading a paper, presented, with the compliments of the Governors, to each member, a copy of a beautifully bound and illustrated *History of the Bethel Hospital, Norwich*.

On the motion of Dr. D. G. THOMSON, seconded by Dr. OSBURNE, and carried unanimously, the Secretary of the Division was instructed to write a letter to the Governors of the Bethel Hospital thanking them for the generosity of their gift.

Dr. SAMUEL J. BARTON read a paper on "An Epidemic of Sore Throat at the Bethel Hospital."

The HONORARY SECRETARY gave a short account of an exceptional case of cancer.

A vote of thanks was unanimously passed to Dr. J. Fielding for so hospitably entertaining the Division.

After the meeting the members were taken to the Norfolk and Norwich Hospital by Dr. Samuel J. Barton, Senior Physician, who generously gave up his valuable time to personally conduct a party through the wards and museum of this up-to-date institution.

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### NORTHERN AND MIDLAND DIVISION.

THE Autumn Meeting of the Northern and Midland Division was held, at the invitation of the Committee of the David Lewis Colony, at the Colony, Sandle Bridge, near Alderley Edge, on Thursday, October 11th, 1906.

In the morning members were shown over the colony and visited the various villa residences for epileptics under the guidance of Dr. Alan MacDougall, the Medical Director, and afterwards lunched together, at the invitation of Mr. Helm, the Chairman of the Committee. Mr. Royle, on behalf of the Committee, welcomed members to the Colony.

There were present fourteen members, viz. Drs. Colcott, Edgerley, Kay, T. W. MacDowall, Alan MacDougall, Mackenzie, Nixon, Owen, Pierce, J. M. Rhodes, Sheldon, Sutcliffe, and Trevelyan, as well as eight visitors.

Dr. Alan MacDougall presided.

The minutes of last meeting were read and confirmed.



Drs. Hitchcock, MacDowall, and MacPhail were re-appointed members of the Divisional Committee.

The Secretary was instructed to write to Dr. Macleod expressing the regret of the members that he had retired from his post at the East Riding Asylum owing to ill-health, and was unable in consequence to invite the meeting to Beverley, as arranged.

It was decided to cordially accept Dr. Perceval's invitation to hold the Spring Meeting at Prestwich Asylum.

#### SOME REMARKS ON OBSESSIONS AND IMPERATIVE IDEAS.

Dr. ERNEST S. REYNOLDS read a paper on "Obsessions and Imperative Ideas." He mentioned the simple examples found in every-day life, such as the idea that the gas-tap has not been properly turned off. In the shape of fixed delusions impelling to some action they are common in the insane. But he specially alluded to those occurring in the purely neurotic patients, and related short accounts of such cases which could be classified as (a) instances of over-caution often combined with the insanity of doubt; (b) those occurring in hypochondriasis as syphilophobia; (c) some of the fears of neurasthenia; (d) those impelling to homicide or suicide.

Dr. T. W. MACDOWALL said that Dr. Reynolds' paper brought back to his mind a conversation with Dr. Hack Tuke many years ago. Dr. Tuke related the case of a young schoolmaster who had struggled against an impulse to commit indecent acts with pupils if these happened to wear knickerbockers. If the boys were dressed in trousers the morbid impulse did not occur. The schoolmaster deplored the impulse, begged that he might be saved from it, and asked Dr. Tuke to save him from the commission of acts which he knew would cause him ruin and probably lead him to prison. Dr. Tuke advised the patient to abandon his work in this country and seek refuge in a colony with a very scattered population. This advice was followed, but with what result he did not know.

Dr. E. VIPONT BROWN, of Manchester, a visitor, said it so happened he could give the conclusion of the story. The schoolmaster did actually commit an indecent assault and had to leave the country, and he went to a large school in one of the colonies. Here his health broke down, he lived a hermit life for some years and died of general paralysis.

Dr. BEDFORD PIERCE related two cases of imperative ideas, *viz.* a man who said he had "double thought" and uncalled for ideas which arose when an object presented itself—*e.g.*, the sight of a hammer suggesting a blow on the head. The other case was a man who had an impulse to murder his child, and who made a good recovery as a voluntary patient in an asylum.

Dr. SHELDON and Dr. FINNEY joined in the discussion and Dr. REYNOLDS replied.

#### THE ETIOLOGY OF THE EPILEPTIC.

Dr. ALAN MACDOUGALL read a paper on "The Etiology of the Epileptic." He considered that several of the unpleasant characteristics of the epileptic are the result of treatment, not symptoms of the disease. He urged that treatment should not be directed solely, or even principally, against fits; but that the chief aim should be to keep the patient, in spite of his fits, as much like his neighbours as possible. He ascribed the benefit of colony treatment to the fact that at a colony the epileptic can regard himself as a normal member of the community in which he lives.

In the discussion which followed Dr. J. MILSON RHODES stated that it had been found that epileptic patients were generally worse on Mondays, from which it might be inferred that work and regular occupation was beneficial to them.

Dr. J. S. REYNOLDS dwelt upon the difficulty in persuading parents that work is an essential for the epileptic.

Dr. TREVELYAN spoke of the discouraging results of the treatment of epilepsy, and especially referred to the injury frequently resulting from the administration of bromides.

THE INCREASE IN THE NUMBER OF THE CERTIFIED INSANE, AND THE DECREASE  
IN THE MORTALITY FROM DISEASES OF THE NERVOUS SYSTEM.

By J. MILSON RHODES, M.D., J.P.

The statistics of the number of certified lunatics in our asylums, as disclosed by the sixtieth Report of the Lunacy Commissioners, has raised a considerable amount of alarm in the public mind, an alarm largely due to certain sensational articles in the press, most of them evidently written by writers with an elementary knowledge of the science of statistics; *e.g.*, one writer states that "insanity is rapidly on the increase, for statistics compiled in 1859 showed that the percentage of insane persons then was one in every 536 of the total population and to-day the percentage had increased to one in every 285, nearly doubled."

I was always under the impression that one in 285 was a ratio and not a percentage; but leaving that aside, the statistics of the Commissioners prove that the number of the *certified* insane under the control of the Commissioners has increased and nothing more. The assertion made is about one of the most outrageous examples of the *non sequitur* order of fallacies that I have ever come across. To show the absurdity of the statement, take the case of a City sanatorium with which I am acquainted. The cases of scarlatina in 1894 and 1904 were as follows:

Year.	In hospital.	Cases notified.
1894 . . . . .	1415	3963
1904 . . . . .	2214	2988

The number of cases in the hospital rose by upwards of 700, but the number of cases notified fell by nearly 1000.

The returns of the Metropolitan Asylums Board prove that the same change of opinion is taking place in London. How great the change has been is seen from the following statistics of the percentage of admissions to notifications.

Disease	1891	1901
Scarlet fever . . . . .	46'84	78'89
Diphtheria . . . . .	25'07	74'85
Enteric . . . . .	27'34	45'34
Typhus . . . . .	70'37	85'0
Smallpox . . . . .	55'26	97'29

The public are now accustomed to make use of what are really State hospitals for the treatment of physical disease, and there can be little doubt that the same is true in regard to those suffering from mental disease.

I am quite aware that during the last ten years the Registrar-General's return shows a very considerable rise in the mortality from insanity; the figures are:

1880	1885	1890	1895	1900	1904
65	99	93	119	130	127

But if you turn to the deaths from softening of the brain and reverse the order of years, you find some very suggestive figures:

1904	1900	1895	1890	1885	1880
67	70	90	120	124	127

If you add the mortality from insanity and softening together, you get the ratios as follows:

1880	1885	1890	1895	1900	1904
192	223	213	209	200	194

No alienist would assert that softening of the brain had really fallen by 50 *per cent.* during the last quarter of a century. Another cause must be found, and that cause is the fact that the cases of so-called softening are now sent in large numbers to the asylum, and so come under their proper classification in the returns instead of under their former *omnium gatherum*. A reference to the Commissioners' Reports strongly supports this view; taking at random the forty-seventh and sixtieth, we find the following ratios:

Years.	Under 15	15—	20—	25—	35—	45—	55—	65 and upwards.
1884—1888	3	2'8	5'8	8'6	10'9	11'1	10'1	9'9
1900—1904	3	3	6'2	9'0	11'9	13'2	13'1	14'8

It is true that the ratio of patients admitted has risen from 5·4 per 10,000 to 6·5, but a glance shows that the really serious rise in numbers takes place after forty-five years of age. What a serious matter this is for the ratepayers is shown by taking the totals for the same periods:

Years	Under 15	15—	20—	25—	35—	45—	55—	65 and upwards.
1884—1888	298	723	1359	3299	3221	2420	1554	1188
1900—1904	266	975	1928	4741	4747	3834	2555	2252
	-32	+252	+569	+1442	+1526	+1414	+1001	+1064
Population	10,545*	3246*	3120*	5255*	3996*	2362*	1943*	1517*

\* 000 omitted.

Another powerful cause of the increase of the number of certified insane is the extended gathering ground from which we now draw our cases. In 1859 the number of private cases was 4679; in 1904 the number of private cases was 9551. It had taken forty-five years to double the number of cases in private asylums, and that in spite of the fact that the population had risen from nineteen to thirty-three millions. If we turn to the pauper class, we find that the numbers in county asylums had nearly doubled in 1879, only twenty years, and had trebled by 1899.

Anyone who will carefully study the figures can come to no other conclusion than that a considerable number of cases that fifty years ago would have been sent to the private asylum are in these democratic days sent to the county asylum, or in some cases even to the workhouse.

That diseases of the nervous system are on the increase is an assertion often made, and on asking for the proof of it we are referred to the number of cases in the asylums. My opinion as to the alleged increase is very much that of Betsy Prig in regard to the existence of Mrs. Harris. The Registrar-General's Report certainly does not show an increase, as the following figures prove:

*Causes of Death Showing an Increase.*

	Per million.		
	1885	1895	1904
General paralysis and insanity, not puerperal . . . . .	99	119	127
Locomotor ataxy, paraplegia, and diseases of the spinal cord . . . . .	63	75	80

*Causes Showing a Decrease.*

Meningitis, inflammation of brain . . . . .	313	248	186
Softening of brain . . . . .	124	90	67
Chorea . . . . .	5	4	4
Epilepsy . . . . .	116	93	86
Laryngismus stridulus . . . . .	27	20	12
Other diseases of nervous system . . . . .	171	113	108

We often hear a great deal about the increased worry and stress of life, but the pressure is far greater amongst the upper and middle classes than in the case of the labouring classes; yet amongst the former there is certainly no "enormous increase," and why there should be amongst the latter I fail to see, because they are better housed, better clothed, better fed, and work shorter hours of labour, under enormously improved sanitary conditions, to what they did formerly.

The increase in the number of the insane in our asylums is due (1) chiefly to the accumulation of the cases in the asylums. Few people take the trouble to reckon how rapidly this takes place. For example, you admit 100 people to a new asylum; 37 recover, 10 die. If the admissions, recoveries, and deaths continue at the same ratio in three years the number of cases in the asylum will have doubled without any increase in the prevalence of insanity.

(2) The enormously increased confidence of the public in the treatment of the mentally and physically sick in our State institutions as compared with what they were and what they were thought to be a quarter of a century ago. I well remember an old lady blaming me for sending a case to an asylum, because she asserted "if they are bad cases they smother them under feather beds." You do not hear such nonsense now; the nonsense you hear is more about castration to prevent the increase of the unfit.

(3) The difference in the distribution of the people now and ten years ago. During that time the rural population of England and Wales only increased from 7,257,000 to 7,469,488. The urban in the same period rose from 21,745,000 to 25,058,000. There is no necessity to point out that a case of harmless dementia that could be easily tolerated in a thinly populated rural district becomes sometimes an intolerable nuisance to the neighbours if in an urban district and addicted to certain habits. Again and again I have been consulted about such cases by aggrieved parties. The cases that used to be kept at home are no longer seen. "The moping idiot and the madman gay" are both in the asylum now.

(4) Another powerful factor is the change of opinion that has come over the public in regard to what justifies you making use of the asylum for your friend if of unsound mind. The fact that you had a friend in an asylum when I was a boy used to be looked upon almost as a discreditable thing—a skeleton in the closet, to be concealed if possible. That is to a great extent changed, and we are looking upon the insane as far more probably possessed of toxins than possessed of devils.

(5) The alteration in the standard of mental disease required by the profession to justify a medical practitioner in certifying a case as insane and suitable for asylum treatment. I can very well remember the time when experienced men were very reluctant to sign a certificate unless the case was "dangerous to himself or others."

These are some of the causes of the apparent increase, and, after many years' attention to this question, I have come to the conclusion that Sir Arthur Mitchell and the late Sir John Sibbald were right when, in their Report, they said, "The facts and figures afford no ground for a belief that insanity is to-day more prevalent than when we entered upon our functions, over thirty-six years ago." The fact that the last four years have seen a decrease in the number of admissions affords ground for hoping that we are not far off the time when the question of how to increase the accommodation for our insane will cease to be the ever-burning question of the County Councils that it is to-day.

#### DISCUSSION.

Dr. EWAN said that the figures in Lincolnshire bear out what Dr. Rhodes had said in respect to the increase in the number of certified patients. The increase there has been due to accumulation—*i.e.*, the admissions were more numerous than the discharges and deaths. As to the aged demented in country districts, there is no place else for them than the county asylum.

Dr. MACDOWALL asked about the statement as to the deaths from insanity; in his opinion such were very rare.

Mr. ROYLE and Dr. BEDFORD PIERCE also concurred in the views expressed by Dr. Rhodes.

A small party of members dined at the Midland Hotel after the meeting.

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#### SOUTH-WESTERN DIVISION.

The Autumn Meeting of the South-Western Division of the Medico-Psychological Association was held at Kingsdown House, Box, on Friday, October 26th, 1906, by the kind invitation of Dr. MacBryan, who entertained the members to luncheon and showed them over the asylum afterwards. There were present at the meeting:

*Members.*—Drs. P. W. Macdonald, H. T. S. Aveline, Manning, Aldridge, Bullen, J. L. Baskin, Soutar, Pope, MacBryan, Eden Paul, Bowes, L. A. Weatherly, and Millar.

*Visitors.*—Drs. Whitby, Fleming, Llewellyn Jones, and J. B. Walters. Letters of apology were received from Drs. Robert Jones and Brayn.

Dr. P. W. Macdonald was voted to the chair.

*Votes of condolence.*—After the reading of the minutes the Chairman alluded in feeling terms to the loss the Association had sustained in the recent deaths of Dr. Craddock of Gloucester, and Dr. Stewart of Bridgend, and proposed that the Hon. Secretary should be requested to convey their sympathies to the relations. The meeting assented without any formal resolution being taken.



Dr. Sidney Bazalgette, L.R.C.P., M.R.C.S., Assistant Medical Officer to the City and County Asylum, Fishponds, Bristol, was unanimously elected an ordinary member. The proposers were Drs. Marnan, Aveline, and W. F. Macdonald.

The next business was to elect a representative member of Council in place of Dr. P. W. Macdonald, President-Elect. Drs. Soutar and Bowes were appointed scrutineers, and declared Dr. Bullen unanimously elected.

Dr. R. LLEWELLYN JONES then read a paper on "The Relation of Rheumatoid Arthritis to certain Diseases not uncommonly associated with Mental Disorder, namely Raynaud's Disease, Graves' Disease, and Myxœdema."

We hope to publish this paper in a future issue of the Journal.

#### REMISSION IN GENERAL PARALYSIS OF THE INSANE.

The Hon. Secretary read some notes on two cases of remission in general paralysis of the insane. He prefaced his remarks by saying that authorities were almost unanimous in agreeing that recovery from general paralysis was practically unknown, and that the nearest approach to that state was the incident of the disease known as a "remission."

The two cases described came within the definition of a "remission" as given by Bianchi: "We may have in the course of progressive paralysis periods of improvement, during which almost all the somatic and psychic disturbances disappear, sometimes to such an extent as to simulate recovery. There always remains a certain degree of depression of the various mental activities, but on the whole there is established a condition that is generally satisfactory and very like recovery."

Both cases exhibited the expansive type of the disorder, and in each the "remission" lasted only a few months and did not lengthen the total duration of the disease.

The improvement appeared gradually, while the relapse was sudden and was followed by rapid dissolution.

In one of the cases, as well as in a similar one recorded some years ago by Dr. Bonville Fox, there was a history of syphilis. In both these improvement followed the employment of antisyphilitic remedies, offering an inducement to give such remedies a further and more extended trial, and above all to continue their use over a longer period after the improvement, if any, had been obtained.

Dr. LIONEL A. WEATHERLY said it had been interesting to hear of those two cases, for he was sure they must have all met with more or less similar cases. From the point of view of the private asylum superintendent they were not only very interesting but very difficult and trying cases. He well recollected not so very long ago that of a doctor who was placed under his care. He had a fleeting practice, which he recommended should be sold at once, and it was. He stayed with him for some weeks, but the case was too noisy and violent, and he had to be transferred to a neighbouring institution. He was intensely surprised to hear one day that the patient was quite well and back in Bristol, which was the town from which he came, and he (Dr. Weatherly) was having an unpleasant time of it at his hands. He was represented as having ruined him. He was in Bristol, stranded, with nothing to do, and he (Dr. Weatherly) was the cause of his practice having been sold. He took the position of ship's surgeon, and made a trip, during which he performed his duties with perfect success, but within six months he was back in the asylum again, and very soon died. His was a definite remission. But the most interesting case of remission that had come across his experience was one that Dr. Aveline, when he was his (Dr. Weatherly's) assistant, might have had something to do with. The patient had many grandiose delusions, and this went on for some time, when a succession of fits took place, and he became bedridden. He went downhill fast, had very little use in his hands and arms, and became hopelessly bedridden. Bed-sores developed, and an operation subsequently took place. His mental symptoms disappeared, and he mended in a remarkable way, although his friends had been to see him and say good-bye. He went out driving, attended horse shows, and thoroughly enjoyed life. He became intensely religious, and was to a certain extent unreasonable, because he wrote sheets upon sheets out of the Bible for

circulation among the poor, under the impression that they could not afford to buy the written Word of God. Later he developed the idea that he was the Holy Ghost, and that it was his bounden duty to bite out the testicles of anybody he could find to save them from ultimate perdition. Finally a state of acute mania developed, and he died.

Dr. AVELINE stated, in reply to Dr. Paul, that the dose of iodide of potassium which he had prescribed in the case alluded to was 10 grs. three times a day, continued over a period of some months.

At the close of the proceedings the CHAIRMAN said he had the pleasurable duty of offering their kind host their thanks for having received them so hospitably.

Dr. MACBRYAN, in reply, assured the members that it had been a great pleasure to him to have received them that day. It would interest them to know that Kingsdown House was said to be the oldest licensed house in England, dating back to 1792.

The members dined together at Messrs. Fortt's restaurant, Bath, in the evening.

### SCOTTISH DIVISION.

A meeting of the Scottish Division of the Medico-Psychological Association was held at Perth District Asylum, Murthly, on Friday, November 2nd, 1906.

The following members were present: Drs. Alcock, Carlyle Johnstone, Easterbrook, Goldie Scott, Gostwyck, Keay, Kerr, Macdonald, McIlwraith, Mackenzie, Marr, Parker, G. M. Robertson, J. M. Rutherford, and L. C. Bruce, Divisional Secretary.

Dr. Carlyle Johnstone was called to the chair.

Letters of apology were intimated from the President and Dr. Watson.

The minutes of last meeting were read, agreed to, and signed.

The following nominations were made: Drs. Turnbull and L. C. Bruce to be Representative Members of Council; Dr. Hamilton C. Marr to be Divisional Secretary; examiners in psychological medicine, Drs. Easterbrook and Oswald.

Dr. BRUCE showed a case of melancholia, and illustrated the disease process by charts; (1) of the urinary excretion of urea as against the nitrogen ingested in the food; (2) leucocyte charts, comprising that of the melancholic patient with charts compiled from sane persons who were at the time of observation suffering from known disease processes; (3) charts of opsonic indices in similar cases of melancholia to the patient shown, and in whom bacteria had been isolated to which the serum of the patients gave a definite agglutinative reaction; (4) charts of the opsonic indices in a case of chronic rheumatism and in a case of fissure of the tongue—both sane persons—were also shown and compared with the indices in the cases of mental disease.

An interesting discussion followed.

The Division appointed Drs. Ireland, Urquhart, and Ford Robertson, with powers to add to their number, to represent the Division at the International Congress for Psychiatry and Neurology to be held at Amsterdam in September, 1907.

The project of a joint meeting with the American Medico-Psychological Society was mentioned, and a letter was read from Dr. A. E. Macdonald.

The meeting terminated with votes of thanks to the Chairman and Dr. Bruce.

The members afterwards dined at the Station Hotel, Perth.

### IRISH DIVISION.

The Autumn Meeting of the Irish Division was held on Monday, November 5th, 1906, at the Royal College of Physicians, Dublin, by the kind permission of the President and Fellows of the College. Dr. Conolly Norman occupied the chair, and there were also present Drs. G. T. Revington, F. E. Rainsford, G. F. West, T. Drapes, E. D. O'Neill, R. L. Graham, J. Mills, R. R. Leeper, W. Graham, J. J. Fitzgerald, M. J. Nolan, H. M. Eustace, and W. R. Dawson (Hon. Sec.).

Dr. NORMAN said that before the minutes were read he would ask the permission of the meeting to propose the following resolution: "That this meeting desires

to express the sorrow felt by every member of the Association at the death of our distinguished colleague Dr. Oscar Woods, ex-President of the Association. We desire to convey to Mrs. Woods and the other members of our lamented friend's family our sincere sympathy in the irreparable loss which they have sustained." He was sure that he spoke the mind of the whole Association in this expression of condolence.

Dr. O'NEILL, in seconding the resolution, said that the Association could ill afford to lose Dr. Woods. He was a conscientious man, a hard worker and a good friend, and his death was an irreparable loss to the profession and his family.

The resolution was passed unanimously in silence,

The minutes of the previous meeting were read, confirmed, and signed.

The SECRETARY reported shortly on a matter arising out of them.

It was proposed by Dr. RAINSFORD, seconded by Dr. REVINGTON, and carried, that the next meeting of the Division be held at Portrane Asylum, on the second Thursday in April, 1907, as the members were of opinion that this date would be more convenient than Monday, April 22nd, the date originally fixed, the President's consent to the change to be secured.

Referring to the recent Report of the Viceregal Poor Law Reform Commission, Dr. NOLAN thought it satisfactory that the Commission had adopted the recommendations of the Committee appointed by the Irish Division, so far as to advise that all lunatics should be placed in asylums and looked after by a resident medical officer.

Dr. WEST then read a paper on "The Utilisation of Asylum Sewage," in which he advocated the employment of a filtration system and the use of the solid products for manure.

The CHAIRMAN called on Dr. Revington to give the results of the system in use at Dundrum.

Dr. REVINGTON said that the precipitation system there produced a good effluent which did not decompose and was free from smell, but that the manure would only grow green vegetables, not potatoes, being a "cold manure." It would also grow grass, but of poor quality. The fluid was also useless as manure. He had tried cow-manure and human manure on potatoes side by side. The cost of working was 4d. per week per head for the population of 200.

Dr. DRAPES had obtained poor results from the use of cesspool contents as manure. He alluded to the rapidity with which sewage was sterilised in a river, but had found the drinking of such water unsafe. Spreading sewage on land had been tried at Waterford Asylum, but discarded owing to the smell.

Dr. DAWSON thought that the human manure having already been decomposed, the conditions were not the same as with cow-manure.

Dr. LEEPER had found the septic tank system work well, but had not tried the products on land.

Dr. RAINSFORD said that fresh sewage had been tried as manure at Bristol Workhouse, but found unsatisfactory owing to the smell. The infectious tract in a river extended at least fifteen miles below the point of sewage discharge.

Dr. GRAHAM read an interesting paper entitled "The Psychology of Christian Science." He traced the growth of the cult in spite of argument and ridicule, and expressed the view that, though seven tenths of the so-called recoveries must be rejected, there existed a grain of truth in Mrs. Eddy's teachings, that grain being the power of the mind to control the bodily state, a power recognised by all who practise suggestion.

After some remarks by Drs. Norman, O'Neill, and West, Dr. Drapes agreed that suggestion explains a good deal, though he thought that certain facts related, for example by Crookes, contravene physical laws. He mentioned an instance of a man suffering from hay fever who improved after writing to a Christian Science expert, but relapsed on finding that the latter had not received his letter.

Dr. NOLAN thought there was a further element which could not be quite understood, and related the case of a tabetic patient who was judged by an eminent medical man to be dying, but who walked into his study three weeks later after a visit to St. Winifred's Well. A neighbour said to have been similarly affected also went and was improved.

Dr. RAINSFORD alluded to the large nervous element in disease as explaining Christian Science "cures."

Dr. NORMAN thought that the interest, other than metaphysical, of the new faith consisted in the vogue it had attained. Cases like that quoted by Dr. Nolan sometimes improved greatly without aid at all, as shown in that of a tabetic general paralytic of fifteen years' standing, who was quite helpless and suffered from bed-sores, but began to get better and recovered power of walking. Evidence of the dependence of well-marked physical disease on mental causes was accumulating—e.g., some cases of Bright's disease.

Dr. GRAHAM, in replying, said he had heard a Christain Scientist claim that a tumour had been cured.

Dr. NOLAN brought forward a study of a case of melancholic *Folie raisonnée*.

Dr. RAINSFORD substituted for the paper on the agenda one entitled "Clinical Notes of Four Cases of General Paralysis of the Insane."

The meeting concluded with a vote of thanks to the President and Fellows of the Royal College of Physicians for the use of the college hall.

In the evening the members dined together at the Shelbourne Hotel.

## THE MILAN INTERNATIONAL CONGRESS.

REPORTED BY W. W. IRELAND, M.D.

THE second International Congress for the Assistance of the Insane was held at Milan from September 26th to the 30th. The different chambers of the University Bocconi had been arranged for the use and comfort of the visitors. The meetings were held in the great hall, a circular chamber well lighted and adapted for acoustic purposes. In the upper story there were some interesting models and plans of asylums. Dr. Augusto Tamburini, of Reggio-Emilia, discharged the duties of President with his usual address and ability, and much of the success of the Congress was owing to the unwearied energy and courteous attention of the secretaries, Dr. G. C. Ferrari, of Bologna, and Dr. P. Gonzales, of Milan. There were about three hundred adherents on the list of the Congress, but the attendance was seldom greater than fifty or sixty. Although the larger number was composed of Italians, there were physicians from every country in Europe and America. There were official delegates from France, Germany, Austria, Hungary, Holland, Belgium, Portugal, Greece, Roumania, Sweden, and Luxembourg, who were entertained at a banquet by the Committee. After the opening address of the President, Dr. Frank, of Zurich, read a paper advocating the formation of an International Committee to collect information about the causes of insanity with a view to prophylaxis. He expressed the hope that this would lead to the formation of an International Institution to ascertain and combat the causes of insanity. Professor Zuccharelli, of Naples, stated that he had already made a similar proposal to the International Congress for Criminal Anthropology at Amsterdam. Dr. Easterbrook had communicated to the Milan Congress a scheme for International statistics of the insane. Professor Lombroso considered that little would be gained from such an assembly, but Dr. Frank's proposal, supported by Professor Bianchi, Dr. Percy Smith, Dr. Cassaves, and Dr. van Deventer, was eventually carried. Dr. Lombard offered the use of his chateau on Lake Lugano for the meetings of the Committee. The subjects discussed at the Congress included the general care of the insane and idiotic epileptics, criminals, and drunkards. There were eight sittings; besides Italian the French, English, and German languages were allowed.

As the number of papers read or communicated was considerable, we can only indicate some which strike us as more interesting. Much attention was given to the family treatment of the insane, which, it was hoped, would afford a relief to the expense of building new asylums for the ever-increasing number of lunatics. Dr. Agostoni, Superintendent of the asylum at Perugia, stated that the out-of-door treatment of harmless lunatics in Umbria had been given up. The subsidies were ill-spent, and the use of spoiled maize in the dietary was a cause of danger and degeneration.

In a communication by Drs. Tamburini and Guicciardi it was stated that, in spite of the obligatory instruction of attendants and guardians, the family care of the insane had not been attended with the desirable success save about the asylums



of Reggio-Emilia and Lucca. In the Canton de Vaud the Grand Council had authorised two years ago the placing of harmless chronic lunatics in the country under certain conditions, which Dr. Ladame states has already given good results.

Dr. C. Hubert Bond, Superintendent of the Colony for Epileptics at Ewell, explained the arrangements for the admission, case-taking, and treatment of different classes of lunatics according to their symptoms and degrees of excitement in the most modern English asylums.

Dr. van Deventer gave the results of his arrangements for the treatment of lunatics at Amsterdam. He found that in some cases the *infirmières* had a wholesome influence upon the male patients, though precautions were needful.

Communications were also made by Dr. Menziès (Chedleton) and Dr. MacDonald (Hawhead), who read his paper in Italian, and Dr. Percy Smith communicated a description of the new asylum at Hellingly by Drs. Hayes Newington and Percival Taylor. There also came from Dr. Easterbrook a description of the new infirmary of the Ayr Asylum.

One of the most interesting communications was the report of Dr. Ladame, of Geneva, upon the Swiss Society for the Help of the Insane. The first of these was founded forty years ago at St. Gall. An appeal was made by the medical men of that canton to their fellow-citizens to form themselves into a society to afford succour to those discharged from the asylum, so that they should not fall into unfavourable conditions from poverty or lack of suitable employment. At the outset the Society counted 344 members; now it has nearly ten times as many, with an accumulated capital of 105,000 fr. The Society spends 5000 francs a year in aid of patients and their families. There are now societies of this kind in twelve cantons, counting above 33,000 members; a small sum qualifies for admission. The object of all these societies is to afford assistance to lunatics and their families before, during, and after their treatment, and to diffuse correct ideas about the causes, prevention, and nature of insanity.

Madame Marie, the wife of Dr. Marie, the Superintendent of the Asylum of Villejuif, gave an account of similar efforts in France for the assistance of convalescents, and Dr. Jules Morel, of Belgium, read a paper on "The Character of the Societies for the Assistance of the Insane, what they are and what they ought to be." Dr. Percy Smith presented a complete account given by Dr. Fletcher Beach of what was being done in England for abnormal or for epileptic children, and Dr. Gourjon gave a similar report from France. He considered that the return from the Minister of the Interior of 31,791 such abnormal children had need to be multiplied by four; in round numbers there are 120,000 of them. There are known to be 4453 under age in the asylums; 1448 of these are under thirteen. In the course of his report he paid a well-deserved compliment to Dr. Bourneville, who, in a labour of thirty years, has modernised and completed the methods of Seguin; Bourneville has organised his department at the Bicêtre by the provision of new buildings and the training of teachers and attendants, the necessary funds having been obtained from the Government. Having passed the age limit, Bourneville has had to leave his post at the Bicêtre, though he still retains the direction of the Fondation Vallée.

On the 28th the whole Congress went upon an excursion to the asylum of Mombello, eleven miles in the railway from Milan. The asylum buildings are placed upon an eminence which rises above the waveless plain of Lombardy. It was opened for the reception of the insane forty years ago. In 1879 the number resident was 1481, the admissions 403. In 1905 the number resident was 2600, the number of admissions 857. The recoveries during the last five years were 2216—males 12'95, females 41'39 *per cent*.

Upon a total population of males 4456, females 3763, the death-rate has remained about the same, between ten and eleven *per cent*.

It was new to us visitors from the North to see cases of pellagrous insanity. From 1879 there were admitted 2858, 1509 males and 1349 females, suffering from this malady. Sometimes collapse supervenes so rapidly that the patient dies before he can be borne to the asylum. From 1901 to 1905 there died in Mombello fourteen patients from "tifo pellagroso."

About this time there were no less than eight congresses which the Milanese, sagaciously taking advantage of the International Exhibition, had got to assemble on questions of jurisprudence, sociology, and medicine. Amongst these was a

"Congresso pellagologico" to devise further measures for the prevention of this disease, the scourge of Lombardy, which is known to be caused by the use of spoiled maize. In Italy about ten *per cent.* of the cases of pellagra become insane. This Congress, after hearing a report from Dr. Probizer, of Rovereto, went to visit the Pellagrosario of Insago, a charitable institution, at which they were received by the President, Senator Facheria. The admissions for pellagrous insanity at Mombello were in 1879, 89; in 1905 they were 62, from which we may infer that the disease has become less frequent.

Unhappily, the admissions from insanity following alcoholic intoxication, which bears some resemblance to pellagrous insanity, are increasing in Lombardy, though the Italians are on the whole a sober people.

Restraint is not used at Mombello; 37 *per cent.* of the inmates were at work on the grounds or in the workshops and laundries. The asylum is made up of twenty-six separate buildings; the bigger blocks enclose a square court in the centre with a pillared verandah, as is customary in large houses, in Italy. To one accustomed to the asylums in Great Britain, where so much stress is laid upon decorations and furnishings, the large rooms looked bare and dismal; in fact, there was no furniture to be seen save the beds, which were sufficiently comfortable. There seemed to be no heating apparatus for the four cold months.

It is proposed that Mombello should be set apart for chronic lunatics to the number of 1500, and that a new asylum should be built near Milan for the treatment of curable cases. Although a thoughtful and vigorous administration may overcome many inconveniences, Dr. Verga has clearly shown in his able report that the quiet, order, and hygiene of the establishment suffer from the too great contiguity and overcrowding of the patients in some of the large storied blocks.

After a sumptuous luncheon, with flowing wines and fluent speeches, the Congress returned to Milan in time for an evening sitting.

Fresh impulse has been given to the care of the insane by the promulgation in 1903 of a new law regulating the organisation of the asylums throughout Italy, which clearly defined the power of the medical superintendents and added to the number of assistants. Italy is anxious to learn from the experience of other countries, while possessing in herself a fund of original vigour.

The Congress closed with a most pleasurable excursion to the Swiss Asylum of Mendrisio, on Lake Lugano. This beautiful asylum was opened eight years ago. It is made up of a number of handsome blocks spread over wide grounds amongst plantations of pine and cypress. It occupies an eminence in a picturesque valley surrounded by high peaks of the Alps; the number of patients is 219—males 128, females 91. The number of inmates has doubled since 1899. The medical laboratory and apparatus for research were finely equipped, as was the case in all the Italian asylums I have visited. After a plenteous breakfast in the open air, the company walked down to Lake Lugano, where a steam-boat was waiting to convey them to the town of Lugano. In the evening they were entertained at a splendid banquet in the Hôtel Bristol, given by the Cantonal Government of Ticino. They returned to Milan about eleven o'clock at night. Next day the members of the Congress separated, each being supplied with a permit to travel on all the railway lines of Italy at a reduction of 60 *per cent.* They were also furnished with a large map indicating the situation of all the asylums which they were invited to visit.

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### THE BETHEL HOSPITAL, NORWICH.

The Governors of this hospital have just issued a history of this institution, which was commenced by the late Sir Frederick Baileman, for many years the consulting physician, and has been completed since his death by the eminent Norfolk antiquarian Mr. Walter Rye.

The book is a quarto volume, containing the portrait of the founder, Mrs. Mary Chapman, and of seven other worthies associated with the history of the hospital, all admirably executed. A full plan of the present hospital is given, together with a number of illustrations of its various parts.

The historical part of the work is very thoroughly done and of great interest, showing the handiwork of the skilled antiquarian. The volume will be added to the library of the Association.

## CORRESPONDENCE.

## PRIVATE ASYLUMS.

*To the Editors of the 'Journal of Mental Science.'*

GENTLEMEN,—The defence of private asylums in the last number of the *Journal* is certainly convincing, for it shows that the percentage of recoveries in provincial licensed houses was higher last year than that in any other class of institutions for the insane. But, in addition to this, it may be pointed out that the true recovery rate in private asylums—*i.e.* the ratio of the number who get well to the number who die or become chronic—is higher than the apparent recovery rate estimated by the ratio of recoveries to admissions. The cause of this is that many patients are removed from licensed houses, for pecuniary or other reasons, without being given the chance of getting well. This is not the case to an appreciable extent in public asylums; about registered hospitals I am ignorant. The patients thus removed swell the number of admissions without being afforded an opportunity of adding to the number of recoveries. In public asylums practically all the patients admitted either recover on the one hand, or, on the other hand, die or become chronic; hence the percentage of recoveries may reasonably be expressed by the ratio of recoveries to admissions. But in licensed houses the existence of a large third class—those who are taken away for monetary or other motives—vitiates this method of computation. The larger this third class is, the more unfair does the use of the above ratio become.

The Commissioners in Lunacy have recognised that this method of estimating the recovery rate is unsatisfactory, but they have shown that there is no other practicable method that is not even more so. It would be well, however, if they would indicate that the use of the ratio of recoveries to admissions bears hardly upon licensed houses.

The unfairness is not so great as it might seem at first sight, for the patients who are thus removed rarely include the most acute and curable cases, so that the percentage of recoveries amongst them would not be high. Still, I have known acute cases removed when progressing rapidly towards convalescence, and even among the others some would get well. It is probable that some private asylums would have their recovery rate raised 4 or 5 *per cent.*, or possibly even more, if it were not for these cases.

It may be said that, on the other hand, public asylums labour under a disadvantage that affects their recovery rate, in that the poor do not send their insane friends till they are practically compelled to do so. But neither do the richer classes as a rule. Indeed, the case is even worse with these, for they take the patient to a consultant who too often has no experience of asylum treatment, and who pronounces him to be insane but not bad enough for an asylum. In the same manner one might tell a man with a broken leg that he has a fracture but is not bad enough to wear splints. I use this simile advisedly. The action of asylum life on an unbalanced mind appears to me to be analogous to that of a splint on a fractured limb. Quite as important as the healthy life, the skilled care, and the isolation from home surroundings is the routine existence which keeps the unsteady mind in artificial grooves, so to speak, and thus furthers powerfully the return of steadiness. In addition to this there is the strong "suggestive" action due to being surrounded by others who all lead the same routine life. These most important factors of cure cannot be found in "private care." There are other advantages of asylums, but they were clearly proclaimed some years ago by Prof. Clifford Allbutt, who spoke with authority, being one who for a time gave up to lunacy what was meant for the benefit of medicine as a whole.

I am, Gentlemen,

Yours faithfully,

P. C. SMITH.

Tunbridge Wells,  
October 30th, 1906.



## OBITUARY.

WILLIAM LLOYD ANDRIEZEN.

We much regret to have to record the death of Dr. Andriezen at the comparatively early age of thirty-six years. Borne of Cingalese parents, he came to this country to study medicine. During his student career he obtained many medals and distinctions, amongst which was the Medical Entrance Exhibition of University College.

In 1888 he was appointed Demonstrator in Physiology. He was Exhibitioner and Gold Medalist in Organic Chemistry at London University in 1889, and obtained the Liston Gold Medal for Original Research and Pathology in 1891. He graduated as M.B.London with First Class Honours in 1891, and M.D.London in 1893.

He held the post of Pathologist and Assistant Medical Officer at the West Riding Asylum, Wakefield; also Deputy Medical Superintendent at the Metropolitan Asylum, Darenth; and latterly he was Assistant to the Director of Cancer Research in the laboratories of the Middlesex Hospital.

In 1893 he contributed to the *Internat. Monats. f. Anat. u. Physiol.* an article on "A System of Neuroglia Fibre-cells surrounding the Blood-vessels of the Brain."

In 1894 he wrote a long account of the "Newer Aspects of Pathology of Insanity," which he published in *Brain*.

He contributed to the *British Medical Journal* an article on "The Neuroglia Elements in the Human Brain" and another on "The Pathogenesis of Epileptic Idiocy and Imbecility."

In 1899 he submitted to the Medico-Psychological Association a paper on "The Bases for Scientific Psychology and Classification of Mental Diseases."

In 1903 he published in the *Journal of Mental Science* an article on "Stereoplasm of Nerve Cell: a Study in Nerve Dynamics," and in 1905 another paper on "The Problem of Heredity, with special reference to the Pre-embryonic Life."

During the last year or so of his active life he devoted himself to investigations in connection with the causation and pathology of cancer.

Dr. Andriezen was well known to the members of the Neurological and Medico-Psychological Associations of Great Britain. His work in connection with neuropathology was known in every country. He was a man of wide reading and an earnest thinker in many departments of biological science. He lived a strenuous life of hard work and but little recreation. All his time and inclination seemed to be centred upon his work and his books, and he appeared to wish to cultivate but few friends. In debate, as in private life, he was always courteous, earnest, and just, and few could but admire his indomitable energy and his mental grasp of the various theories and advances in psychology and neuro-pathology.

His last illness was of one year's duration, and he was laid to rest on Friday, November 23rd; his funeral was attended by Dr. Robert Jones and Dr. Hyslop.

CHARLES ANGUS.

We much regret to have to record the death of Dr. Charles Angus, late Medical Superintendent of the Aberdeen District Asylum, Kingseat.

A native of Aberdeenshire, Dr. Angus had the benefit of an excellent preliminary and secondary education. He entered the University of Aberdeen in 1883, as a medical student, and soon took a distinguished position in the various classes he attended. His favourite subject was anatomy; and he was regarded by the late Sir John Struthers as one of his most exemplary and distinguished students. Thus, on graduating in 1887, he was at once appointed Demonstrator and chief assistant to the Professor of Anatomy. In this position he displayed the same ability and thoroughness which characterised him as a student. During the fourth year of his curriculum he attended a course of clinical lectures on insanity at the Aberdeen Royal Asylum, and for three successive years acted for lengthened periods as *locum tenens* for one or other of the resident medical assistants. On these occasions he showed much aptitude for and was himself so greatly interested in asylum work that he determined to throw aside his excellent prospects as an anatomist and devote himself to the study of insanity. He was



appointed Junior Assistant Physician to the Royal Asylum in 1889, and a year afterwards was promoted to the senior assistantship, a post which he held for over seven years. He was then appointed Medical Superintendent of the Aberdeen Royal Infirmary and Convalescent Home. During the five years he occupied this post he gained the complete confidence of the Directors, who were not slow to recognise his great powers of organisation and administration. While attending to the duties and work of the infirmary he continued to maintain his interest in the study of mental disease, and kept himself fully conversant with the most recent literature and practice. He made a special study of asylum construction and administration, and for the purposes of investigating the villa system he visited the asylum at Alt Scherbitz, with the methods and working of which he made himself familiar.

The District Board were fortunate in securing Dr. Angus as the first Medical Superintendent of Kingseat Asylum, and their judgment was fully justified by the excellent service he rendered in connection with the equipment and organisation of the new institution. There were many problems to be faced in connection with the inauguration of an asylum on new lines, and to the Lunacy Board Dr. Angus' experience and administrative capacity were invaluable. He was able quickly to complete the organisation and staffing of the institution. The satisfactory and efficient manner in which this was accomplished, and the recognition which his ability had obtained from those most competent to judge, are shown in the *Annual Report of the Commissioners in Lunacy*, which contains the following reference to the late Superintendent: "By his zeal and ability he quickly organised the administration of the asylum at its opening, and made it thereafter one of the best managed institutions for the insane in Scotland."

In the management of his patients Dr. Angus was seen at his best. He always seemed to intuitively recognise and adapt himself to their various mental peculiarities. An all-round athlete himself, he took an active part in promoting the recreations and amusements of his patients. In his relations with the members of his staff, and with all the employees of the institution, he was particularly happy; while never relaxing discipline, he was able to secure the most loyal service and co-operation.

Dr. Angus was a unique personality. He was a man of ability, shrewdness, and tact; endowed with a most genial temperament, a man whose cheery optimism made it always a pleasure to meet him, no matter under what circumstances. Moreover, he had that enviable gift, a keen and ever ready humour, which could always be counted on, and which was a frequent source of enjoyment to his friends. He made several contributions to the literature of mental diseases and was an expert microscopist. His untimely death has cut short a career of great promise. He leaves a widow and two daughters to mourn his loss.

#### FREDERICK HURST CRADDOCK.

It is with much regret that we have to record the sudden death on October 14th of Mr. Craddock, Medical Superintendent of the Gloucester County Asylum.

A comparatively young man, he was only fifty-five, Mr. Craddock had until quite recently enjoyed good health, and had been able to carry on his work as actively as ever.

Some rather serious symptoms of heart trouble occurred during the heat of the past summer, and his usual autumn fishing holiday had to be interrupted owing to a severe seizure on the river bank. He was brought home and, after a week or two's rest in bed, seemed to be making excellent progress. He was feeling well and cheerful and was hopefully planning an extended holiday. But it was not to be.

On the morning of October 14th Mr. Craddock was found lying dead on the floor of his bedroom, having evidently succumbed during the night to an attack of syncope.

Mr. Craddock was educated at Lincoln College, Oxford, and at St. Bartholomew's Hospital, and after qualifying was for six months clinical assistant at St. Luke's Hospital. In 1877 he was appointed Assistant Medical Officer at Powick, where he remained, first as Junior, and afterwards as Senior, for a period of five years. In 1882 he was selected from amongst numerous candidates for the post of Medical

Superintendent of the Gloucester Asylum, and here for twenty-four years he carried on a successful work with an energy and zeal that knew no bounds.

An excellent organiser, he brought about much-needed reforms both in the structure and the management of the asylum. He was a strict disciplinarian but had the heart of a woman, and his kindness to both patients and staff endeared him to one and all.

The committee have lost in Mr. Craddock a most valuable officer, and their appreciation of him and his work may best be told in their own words:

"They desire to place on record their appreciation of the great services rendered by their late Superintendent, Dr. Craddock, whose sudden death on the 14th inst. they deeply deplore. By his able management, combining firmness in maintaining discipline with consideration and great kindness towards his subordinates and the patients under his care, he gained in a marked degree the esteem and affection of all who were brought in contact with him."

Mr. Craddock was more of a reader than a writer and he was keenly interested in the social problems that vex the soul of the present-day physician.

The funeral took place at his native village in Warwickshire, and the large number of friends, professional and otherwise, that attended to escort the body to the station was evidence of the esteem in which Mr. Craddock was generally held. A memorial service, attended by members of the committee, the staff, and patients was held in the asylum chapel on the previous day.

#### JOHN GREIG McDOWALL.

By the death of Dr. J. G. McDowall, at the comparatively early age of fifty-five, the West Riding of Yorkshire has lost a most conscientious, capable, and upright officer, his large family of staff and patients a good and affectionate friend, and his many personal friends a most loyal and lovable man.

After his graduation at Edinburgh in 1873 he had a short experience in Scottish Poor Law work at Craiglockhart, but at an early date devoted himself to the study of insanity, obtaining an appointment as Assistant Medical Officer at the then new South Yorkshire Asylum, at Sheffield, in 1873, at that time under the superintendency of Dr. Samuel Mitchell; here his strong individual characteristics soon showed themselves, and his work was marked by that careful, painstaking conscientiousness which stamped everything that he undertook in later years.

In 1887, after keen competition, he obtained the appointment of Medical Superintendent of the then new West Riding Asylum at Menston, and that institution in its development and administration is practically a reflection of his mind. During the early years, when the work of organisation was a severe strain, no undertaking was too great and no detail was too small for his energies and attention, and from morning to night, and from year's end to year's end, his whole object and aim in life was the welfare, good name, and honour of the institution entrusted to his care.

As a Superintendent he was kind, forbearing, and gentle, and had what Pliny calls the best of all characters, namely, he was ready to pardon the errors of mankind as if he were every day guilty of some himself and, at the same time, as cautious of committing a fault as if he never forgave one. As a man he had a most lovable disposition, was perfectly straightforward, even-tempered, and large-hearted. He leaves behind many to mourn his loss, and not least important among them are those amongst whom he lived so many years, his staff and patients.

#### ROBERT SLOSS STEWART.

We much regret to have to record the death, from heart disease, of Dr. Robert S. Stewart, on September 28th, at the early age of forty-four years.

Dr. Stewart was a distinguished student of the University of Glasgow, where in 1883 he took the degrees of M.B., C.M. "with high commendation," and three years later that of M.D., also "with commendation." Having completed his curriculum, he acted as Resident Assistant in the Glasgow Western Infirmary, in the wards of Sir William T. Gairdner, the late Dr. Leishman, and Dr. Alexander Paterson. Thereafter turning his attention to the study of psychological medicine, he obtained the appointment of Assistant Medical Officer at the Glamorgan

County Asylum, at which institution he spent the remainder of his life, devoting himself entirely to the study and care of the insane. So thoroughly were his services and excellent qualifications appreciated by the Committee that they immediately appointed him Medical Superintendent on the retirement of Dr. Pringle in 1904.

Dr. Stewart was an able and indefatigable worker, an excellent statistician, and one of our most valued contributors to this *Journal*. For many years he contributed to the *Glasgow Medical Journal* reviews of papers which appeared in the English, American, and Continental journals devoted to the study of nervous and mental affections. Among his contributions to medical literature may be mentioned the following: "Observations on the Spinal Cord in the Insane," "Ataxo-spasmodic Tabes (Ataxic Paraplegia) in Case of Primary Dementia," "The Spastic and Tabetic Types of General Paralysis," "The Increase of General Paralysis in England and Wales, 1896," "The Decrease of General Paralysis of the Insane in England and Wales, 1901," "The Relationship of Wages, Lunacy, and Crime in South Wales," "The Mental and Moral Effects of the South African War, 1899—1902, on the British People."

By Dr. Stewart's untimely death Glamorgan Asylum has lost an able Superintendent and the medical profession a prominent member. Of a retiring, unostentatious, kind, and genial disposition, he was universally respected and esteemed, and his loss is keenly felt by all who knew him.

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#### NOTICES OF MEETINGS.

*Quarterly Meeting.*—The next meeting will be held, by the courtesy of Dr. A. Molyneux Jackson, at the Notts County Asylum, Radcliffe-on-Trent, on February 22nd, 1907.

*South-Eastern Division.*—The Spring Meeting will be held, by the courtesy of Dr. Taylor, at the East Sussex County Asylum, Hellingly, on April 17th, 1907.

*South-Western Division.*—The Spring Meeting will be held on April 18th, 1907.

*Northern and Midland Division.*—The Spring Meeting will be held, by the courtesy of Dr. Perceval, at Prestwich Asylum, on April 18th, 1907.

*Scottish Division.*—The next meeting will be held on March 22nd, 1907.

*Irish Division.*—It is proposed to hold the next meeting at Protrane Asylum on April 11th, 1907.

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#### APPOINTMENTS.

Bayley, Harry, L.S.A., Assistant Medical Officer to the Warneford Hospital for Mental Diseases, Oxford.

Bond, C. Hubert, D.Sc., M.D., Medical Superintendent of the new London County Asylum, at Long Grove, Epsom.

MacIlraith, N. MacLaren, L.R.C.P., L.R.C.S., L.D.S., R.C.S.Edin., L.F.P.S.Glas., Assistant Medical Officer to the Norwich City Asylum, Helledon, near Norwich.

MacKenzie, T. C., M.B., M.R.C.P.Edin., Senior Assistant Physician to the Royal Asylum, Aberdeen.

Wood, T. Outterson, M.D., F.R.C.P., F.R.C.S.Edin., M.R.C.P.Lond., Consulting Physician to the West End Hospital for Nervous Diseases, Welbeck Street, W.

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VOL. LIII.

## Part I.—Original Articles.

*The Morison Lectures.—On Insanity, with Special  
Reference to Heredity and Prognosis.*<sup>1</sup> By A. R.  
URQUHART, M.D., F.R.C.P.Ed., Perth.

### LECTURE I.—PROLEGOMENA.

*“There are some authors whose only design and end it is to give an account of things that have happened; mine, if I could arrive unto it, should be to deliver what may come to pass.”—Montaigne, Bk. I, Chap. xx.*

IN the daily routine of medical work we are called upon to deliver what may come to pass. The constant weighing and measuring of our observations and experience lead us naturally to an estimation of probabilities. Recovery or death—success or failure in the appointed strife with disease—that is the momentous question to which the physician must endeavour to find an answer. Things have happened; what is to come to pass? Much of skill in prognosis is personal, empirical, and incommunicable; but, as our science advances, with the contributory aid of all the sciences that are subordinate to the master art of healing, so, in just proportion, our premonitions will be determined.

In no kind of disease is prognosis more doubtful than insanity. For long overshadowed by ignorance and superstition, for long regarded as a mysterious calamity, for long



obscured by confusing issues, it is only of late years that the fundamental truths have been disengaged from the fantastic phenomena which formerly dominated the attention of the observer. The tedious melancholy, the violent excitement, the bizarre ideas, and the dangerous conduct of the insane wholly occupied attention, and precluded the study of obscure and elusive bodily conditions. The mere recital of aberrant talk and morbid conduct long detained us with mere irrelevancies. Metaphysical discussions of mental aberrations issued in a reiterated confirmation of Bacon's dictum—*what was a question once, is a question still*. Pathological researches were not unknown. There is no indication of the reasons which led James Murray to devote his fortune to the humane purposes of the Perth Royal Asylum; but it is possible that his uncle's work may have influenced him at a time when Scotland had awakened to a recognition of the public duty towards the insane—a time when public and private beneficence flowed strongly in that direction. His uncle, Dr. Marshall, practised medicine and lectured on anatomy and surgery in London. His posthumous book was published in 1815 under the title, *Morbid Anatomy of the Brain in Mania and Hydrophobia*.

Since then work in this sphere has been incessant and arduous, until, at last, there are indications that more is to be gained by research applied to the living body rather than by perseverance in morbid anatomy. Not that this is a new departure, for the oldest English writer on insanity—Dr. Timothy Bright—in his *Treatise of Melancholie* (London, 1586), discourses at great length on the somatic conditions, and especially on gastro-intestinal disorders, because "melancholic appetite is not proportional to their digestion."

It is unnecessary to discuss the history of medical literature dealing with insanity until the memorable publication of Schroeder van der Kolk's lectures on mental diseases, which took shape about the middle of last century. He arrived at the conclusion that much insanity is due to morbid conditions of the great intestine. In accordance with the medical ideas of his time he described this class of cases *sympathetic insanity*. While he clearly recognised the brain as the organ of mind, he believed that it is liable to disturbance in direct consequence of somatic conditions influencing it in a secondary manner.

This conclusion was widely supported, and here, in Edinburgh, the influence of the body on the mind was definitely fixed and crystallised by Skae's classification of mental diseases. Dr. Skae had the advantage of an able and clear-sighted colleague in the late Dr. Howden, so long physician to the Montrose Royal Asylum, and the earlier work of Schroeder van der Kolk was thus developed along lines which are still sufficiently familiar.

But the trammels of metaphysics were not to be readily shaken off. Even Dr. Maudsley's epoch-making books, tending to freedom of thought as they did, left the position doubtful. Professor Laycock devoted his arithmetical powers to an enumeration of the brain cells, in order to arrive at the possibility of a sufficient number of cells capable of each containing one idea. Futile questions are still demanded as to the intimate nature of the thought.

The traditions of men die hard. Every now and then a case of witchcraft is reported in the newspapers, yet it is 350 years since Reginald Scot wrote his famous book on the *Discoverie of Witchcraft*. I had occasion, some time ago, to show how ancient beliefs survive in modern minds, and remain apparently indelible. Quite lately an obscure book reached me, and I make no apology for quoting part of the title-page: "Hidden things brought to light in reference both to the upper, middle, and lower worlds, or the true millenium only to be enjoyed in the new or renovated earth; also new discoveries in antiquities, with illustrations of those formerly discovered; together with a truly interesting narrative of a man under demoniacal possession, with the discovery of a remedy for the night mare." Notwithstanding the old-world suggestion of this lengthy description of contents, the book was published at Edinburgh, in 1843, by the Rev. Andrew Small, LL.D., of Abernethy, who set to work because "these demoniacal possessions are come to an alarming height, and are obviously the cause of filling the lunatic asylums." Needless to say, Satan had a very poor chance with the LL.D., as is his fate in these tales of demoniacal possession, and the cure was to be found in securely plugging up all the holes in the walls of the chamber of the afflicted person in order to prevent the demons from gaining access.

It is almost impossible to gain any useful information from old asylum records. In the earliest series the recorders note

the reception of a lunatic, and briefly indicate that he was furious or fatuous, sometimes adding an account of heroic doses of medicaments, blistering, and bleeding, and sometimes an indication of removal by death or otherwise. The man was mad, and there's an end on't. At a later period the cases are described as psychological curiosities—how they arrived on foot or in a carriage, how they displayed their morbid ideas, how they wrote, and how they behaved. But, withal, the most chary record of physical disorders, the most elusive statements as to family or personal history. In brief, it was the study of mind apart from body—the psychological content. Having arrived at the conclusion that there is no pathology of insanity, comment on somatic conditions was, of course, superfluous.

It is to be regretted that these methods persisted so long, indeed preventing other than the baldest facts available for a survey of the insanity of the period; yet it would be discourteous and ungrateful to ignore the work that was done, just as we cannot but acknowledge the excellent intentions and practical beneficence which inaugurated and maintained the Royal Asylums of Scotland throughout the earlier years of the nineteenth century.

For example, the blood of the insane is the *dernier cri* of the modern investigator. My predecessor, Dr. Lauder Lindsay, so long ago as 1854 published a series of observations on the histology of the blood of the insane, which he had made in the Crichton Royal Institution, then under the direction of Dr. W. A. F. Browne. He did not claim that his researches elucidated the morbid conditions of mind, or its organ, the brain, but rather illustrated the laws of pathology, the natural relations of healthy and morbid states of mind and body, and, more particularly, the reaction of physical diseases on mental phenomena. The observations were made on 36 officials and 236 patients, the physical diseases under which they laboured having been duly noted. The microscope used varied in magnification from 180 to 380 diameters, and, of course, there was then no means of accurately estimating the relative proportion of corpuscles, although it was apparent to the observer that the white corpuscles were present in excess in a comparatively large proportion of cases. The *résumé* was presented under fourteen headings, the fourth being to the effect that a leucocythæmic condition frequently exists. As examples

of this, cases of general paralysis, acute mania, and melancholia were cited. Unfortunately, Dr. Lindsay concluded that there was no connection between the state of the blood and the mental condition, but that it bore a relation to the physical disorder, debilitated conditions of the system, and general vitiation of the blood. In fact, the time had not come to determine the exact and significant facts which have but recently emerged from the chaotic state of opinion characteristic of pioneer work.

Thirty years elapsed before another systematic investigation of the blood of the insane was undertaken, when Dr. S. R. Macphail in 1884 won the medal of the Medico-Psychological Association. By that time the hæmocyto-meter and the hæmoglobinometer had been invented, and with these instruments of precision further advance was recorded. In general paralysis Dr. Macphail found an increase in the relative proportion of white to red corpuscles, coincident with the progress of the disease; he failed to find any great difference in the proportion of white to red corpuscles in maniacal attacks, while in a series of recent admissions the proportion was increased. Most important is his conclusion that there is a close connection between gain in weight, improvement in the quality of the blood, and mental recovery.

Another prize essay on the same subject was the work of Dr. Johnson Smyth in 1890. He inferred that the relative proportions of white to red corpuscles were so variable as to be of little importance. In many instances, however, he recorded an excess of leucocytes, and stated that the blood of the insane is in a pathological condition.

These brief references to work, which was, of course, laden with many other details, show the tendency of the times. From crude and elementary observations the advance has been remarkable. Quite recently the position has been still further developed by the researches and conclusions of yesterday. We can understand that Dr. Lauder Lindsay's investigations, aided by a high-power microscope, modern staining reagents, and precise methods of estimation, conducted in the light of the knowledge which is daily increasing in important directions, would now be stated with a fuller confidence and illumined by a brighter light.

Within the last few months Dr. L. C. Bruce has published



his records of clinical investigations. Much of his book is concerned with observations on the blood of the insane, and specially on the leucocytoses, which he has shown to be of definite importance in diagnosis and prognosis. What was dimly discerned by Dr. Lauder Lindsay half a century ago is made clear by Dr. Bruce to-day, and especially the important conclusion that the morbid state of the blood is a dominating factor in the evolution of mental diseases. Sufficient has been said to indicate the growth of medical opinion relevant to insanity as an affair of medicine.

Similar references might be made to other somatic conditions, the true nature of which are only now intelligible and explicable. I have referred to Schroeder van der Kolk as one of the first to appreciate the toxic nature of insanity. He said: "It is evident that the brain, as the organ through which the higher intellectual powers are immediately manifested, must especially suffer in insanity. We should, however, be much in error in seeking the proper source and cause of the disease always in the brain, for the influence which many organs exercise upon the brain is evident enough." He thereafter, unhappily, reduced all forms of insanity to two principal groups, one designated *Idiopathic*—a stupid word which sticks like a burr—and the other *Sympathetic*. By the latter he means that the cause of insanity occurs primarily, not in the brain, but in other parts of the body—specially in the abdomen and the sexual system. Van der Kolk had studied the clinical symptoms of insanity for years, and eventually concluded that the prodromal indication is a "venous" congestion of the brain owing to a pathological change in the blood, and an obstinate constipation which leaves its traces on the colon, and especially and commonly on the descending part, where he found constrictions, ulcerations, and false membranes. He also noted the intimate nervous connections of the generative organs and the colon. Passing to the thorax, he observed that those members of insane families who remained sane usually died from phthisis. Van der Kolk, of course, recognised that the diseases named are incompetent of themselves to cause insanity, but that in such cases there must be, in addition, a peculiar disposition, and a particular excitability of the cerebral system.

The Hippocratic doctrine that insanity is caused by disease had been obliterated by the superstitions of the Middle Ages.

Reil concluded that common sensation is the germinating soil of insanity, and disentangled it from Locke's narrow theory that insanity was nothing but a change in the working of the intellect. Jacobi, by an extensive research, established the somatic conditions of mental disease, and finally overthrew Heinroth's doctrine of the common origin of insanity and sin, which, indeed, is not yet unknown in these latitudes. Griesinger and his school, however, in concentrating attention on the brain led to some neglect of the position attained by Van der Kolk, but again the tide turned towards an enlargement of that narrower doctrine. The brain, as the organ of mind, infinitely complex in its own proper connections, is at present the subject of study in its relations with all pathological somatic conditions. Thus, the sympathetic insanity of Van der Kolk is regarded as a toxic affection, not always and inevitably caused by the direct continuity of nervous elements, but rather by a poisoned blood supply; and the newer view is the wider. The contributory causes of insanity are to be sought in heredity, in defect and decay of organisation, in the disordered working of the somatic mechanism, and specially in the toxic elements which may be formed by that disordered mechanism or introduced from without.

The trend of opinion in view of later experience is consonant with this toxic element in insanity, which again brings the manifestations of cerebral disorder into line with other pathological somatic conditions, and leaves the mystery of madness on a par with the mystery of rheumatism.

For the position is, that we have to deal with a constitutional disease, profoundly affecting metabolism, mainly originating in hereditary defect, and issuing in a liability to repeated attacks of insanity, of a cyclical nature, quite different from those maladies which, like smallpox, appear to confer a future immunity.

Dr. Ford Robertson, from this place last year, announced, as a result of his researches on general paralysis, that the etiology of general paralysis and tabes is to be sought in the weakening of general and local defences, and that these diseases are dependent upon an active bacterial toxæmia. I need not repeat his argument for my purpose, which is to summarise broadly the present position in respect of all forms of insanity. It is sufficient to say that the work recorded illumines the

ancient Hippocratic doctrine and translates vague guesses into a defensible system of opinion.

When Lister was as yet revolutionising the practice of surgery and driving out the demon of sepsis from his wards, I had arrived at the conclusion that medical practice must adopt similar methods, and that asylum wards must be cleansed in accordance with the new ideal. It occurred to me that anti-septic treatment might alter the condition of the insane, and I made a long series of therapeutical observations on the internal use of carbolic acid, hyposulphite of soda, etc., which were too crude and ineffective to deserve recording. Newer drugs, such as  $\beta$ -naphthol and eucalyptus, proved more useful, and are still valuable in certain conditions of the alimentary tract; but bacteriology has so reformed our ideas, and so explained our difficulties, that we now gain a higher level of understanding, and have good reason to hope for a higher level of treatment.

From the medical point of view mind is not a separate entity, nor can we think of mental disorders as entities. The mind, normal or abnormal, is but one, or rather one series of vital manifestations, part and parcel of the individual. The brain is the organ of mind, but it is entirely dependent upon somatic agencies for nutrition, repair, rest, regeneration, and removal of noxious products—in short, for the normal manifestations of mind. These are elementary propositions, which are constantly overshadowed by prepossessions which hinder us, as the smoke of the conflagration obscures the origin of the fire. Sir John Bucknill's aphorism that a lunatic is lunatic to his finger-tips gains an added force related to these considerations. The psychic disorder is generalised, the somatic disorder is generalised; both are constitutional. Very rarely is insanity a focal disease. Rather is it a generalised mental reduction dependent upon generalised bodily conditions. It is always a mental reduction, characterised by a loss of the finer feelings, an inability to adapt, a loss of restraint on motor manifestations; and the depth and continuance of this reduction, the severity and pathological importance of the organic concomitants, are the measure of prognosis.

All insanity is defect—at least, a degradation of function, if not a degradation of structure. Politely, we speak of mental affections, just as acute mania is softened to hysteria, and idiocy

to feeble-mindedness, but it is by the recognition of *defect* in the earliest stages of insanity that we may hope to recover lost ground.

If the defect of original constitution—the inherent instability of the neuropathic organism—is manifested in a perverted metabolism or a failure in the somatic defences against malignant bacteria, the aspect, the way of looking at insanity, is totally changed. Insanity is a unity, not a fortuitous collection of kaleidoscopic symptoms each requiring a proper name—M or N, as the case may be. I claim some honour in having so far spent my professional life without a single Greek synonym to my discredit. No doubt it will always be convenient to speak of mania and melancholia, and so on, as convenient descriptions of common symptoms, but we may now hope to pass from these appearances to a more intimate understanding of the underlying facts.

I shall not impose upon the College a new definition of insanity, or a new classification. Definitions grow on every hedge and sprout like mushrooms—for a day. For instance, Cullen's definition—"a lesion of the intellectual faculties without pyrexia and without coma"—will no longer stand the test of the clinical thermometer. If we provisionally adopt Dr. Hack Tuke's definition—"a disease of the brain affecting the integrity of the mind, whether marked by intellectual or emotional disorder"—the content will be a vast variety of forms, the mere recital of the names of which would be intolerable. There is a strong temptation to confer a special designation on every symptom-complex, which can be agglutinated. Knowing so little of the pathological conditions, the symptoms of insanity have been erected into an undue importance, and classifications innumerable have been proposed, not one of which can be regarded as other than merely provisional. A distinguished architect evolved a leading principle in his work, which he repeatedly impressed upon me—*simplify your plans*, and I may be excused if I proceed no further than Griesinger in this matter of classification—broadly founding upon prominent symptoms, for it is still convenient to speak of states of depression, states of excitement, and states of enfeeblement—melancholia, mania, and dementia. Of course there is the familiar objection that melancholia and mania may alternate in the same patient, *e. g.* :



OBSERVATION 2286.—Female, æt. 19. Heredity of neuroses and alcoholism. Manifested delusions of persecution and unworthiness, with hallucinations of sight and hearing, after a prolonged period of depression, ushered in by gastro-intestinal disturbance, sleeplessness, and general malaise. On admission states of depression and excitement alternated in rapid succession, so rapidly, indeed, that they appeared to be almost simultaneous. This confusional condition merged into a dreamy state, not amounting to stupor, which again issued in convalescence and recovery in four months.

This is an example of the evolution of adolescent insanity from the hereditary burden of neuroses and alcoholism under severe physical strain. I find it recorded under the heading of excited melancholia, denoting the symptoms predominating, although, as I have indicated, there were rapid alternations from despair to hilarity. Cases illustrative of the predominance of mania over melancholia could, of course, be as readily adduced.

Therefore, in this broad view of insanity, these main features find place ; but it is also permissible to use the term circular insanity and delusional insanity, as denoting a pronounced mixed, alternating form, and a systematised, delusional condition, neither of which is distinctly mania, melancholia or dementia. In fact, this simple classification is founded upon symptoms in terms of time.

It is evident, however, that as our knowledge progresses we are enabled to screen off from the total numbers of insane persons certain persons affected by definite pathological forms. *I shall therefore further divide the cases under review into cases of ordinary insanity of obscure causation, and cases of definite pathological causation.*

Just here I stand at the parting of the ways—the beaten track has led us surely, if circuitously, to this position, where we discern the pioneers at work clearing the jungle of doubts and difficulties. It has long been evident that general paralysis of the insane constitutes a distinct pathological disease. The march of the symptoms, the pathological conclusions, are determined and evident. It is a gross organic disease of the brain. The evidence for a similar conclusion regarding epilepsy has also accumulated. And, of course, the senile degenerations of cerebral tissues are admitted. The crude toxic action of alcoholism on the intimate structures of the brain is so far determined as to permit of this also being regarded as truly pathological. I shall also add traumata,

whether isolation or violence, for Van Gieson has shown that the effects of these injuries are microscopically identical. There remain cases of idiocy—brains arrested in development or pathologically and irretrievably damaged.

Therefore, on the one hand, while I regard the pathological forms as of little moment in respect of prognosis under present conditions, as fixed, irrecoverable, and already doomed, on the other hand I regard ordinary insanity as uncertain, curable and now even hopeful. It may be that general paralysis is to be lifted out of the category of reproach, that it will be fought and conquered, as has been suggested by Dr. Ford Robertson ; but the difficulties are, to my mind, almost insuperable, and I do not contemplate a general vaccination to obviate the rare event. At any rate these observations are directed to the results of experience rather than the possibilities of the future. And yet it is to the future we must look for relaxation of the bonds now imposed upon us.

I propose nothing new in thus considering cases of insanity. Indeed, it is only a year ago that Dr. Graham Crookshank revived the memory of Dr. W. H. O. Sankey's brilliant generalisation—"that insanity is but the process, and that the so-called varieties are merely differentiated by non-essential phenomena ; that all insanities begin with melancholia, and tend to pass through a succession of stages in the order—melancholia, mania, and dementia, a succession liable at any time to interruption by recovery." It is forty years since Sankey first published these shrewd conclusions, and emphasised the importance of the initial stage of melancholia or depression, so commonly observed, and yet so little regarded. No doubt, in his plea for simplification Sankey was carried a little too far, for it is not in every case in accordance with clinical experience. The facts of the initial stage of insanity are very obscure ; they are overlooked, they are forgotten, they are minimised. Yet it is by these facts that the true somatic nature of these maladies are determined, and in the instant appreciation of them that we are to find a new and more excellent treatment.

I have said that I stand at the parting of the ways towards which Sankey's generalisation led, and at which the track becomes clearer. Dr. L. C. Bruce has lately shown, by the published account of his clinical studies, that, disregarding the

mental concomitants, there is evidence of the toxic nature of insanity. This evidence is of such a nature as to be appreciable by the methods of the clinic and the laboratory, to be checked or corroborated by other observers. It is not a theory of disease, but the direct outcome of a long, laborious, and skilful investigation into the facts of disease, honest and unprejudiced. I cannot refrain from congratulating a Fellow of the College, and my near neighbour, upon the distinguished position he has won. His work opens up new vistas, and affords new hopes. He has finally brought insanity into the category of other somatic diseases, and established a parallel condition, long surmised and discovered with difficulty, long obscured, and at length distinguished by none other than the method of Zadig.

Briefly, it would appear that the time has already come when the conclusions formulated by Dr. Ford Robertson last year in reference to general paralysis—the failure of the organism to protect itself against bacterial invasion—may be extended to forms of ordinary insanity, which hitherto have evaded the skill of the pathologist. Whether it is consequent on a metabolic toxæmia, or on a bacterial invasion, insanity must now be regarded as a condition of disease which demands no special pathology, and therefore no exceptional treatment.

To resume, it is necessary to revise the opinions of yesterday, to recognise that a neuropathic heredity is operative in the weakening of the somatic functions and defences at an earlier or later period of the individual existence; that the physical conditions are the important considerations which now, more than ever, render insanity an affair of medicine, and finally justify the founder of the Morison lectures in the encouragement which he gave to these studies.

### *Statistics.*

The statistics of insanity present grave difficulties, and pitfalls innumerable. They are the most elusive of vital statistics. Asylum statistics are notoriously untrustworthy, and impossible in collation. There is no personal acquiescence in underlying principles, and recent proposals in this direction tend to make confusion worse confounded. There is, for instance, apparently no possibility of general agreement as to the use of the word

"recovery," by which I mean to indicate those in whom there is re-establishment of mental soundness, permitting of return to ordinary life without need of the care and the supervision of others. Recovery may be used to designate a partial improvement in mental condition, a lucid interval more or less temporary, or a discharge from asylum care and control to the custodial care of home life. A final, permanent recovery, we shall see, is a comparatively rare event—just as rare as a true recovery from gout. The recoveries generally claimed in asylum statistics are referable to *cases*, not to *persons*. Even when referable to persons they are only declared, and that rarely, as recoveries so far as official statistics can show. No doubt the same remarks may be made regarding the medical results of general hospitals dealing with other constitutional diseases of obscure causation. The persons are received and treated, are discharged cured, and return relapsed. The vital history can only be completed on death.

Again, the stock question put to an asylum physician is : *Do you believe that insanity is increasing?* It is, of course, a question of urgent national importance, and, therefore, has to serve the purposes of the journalist and the pamphleteer, who gain a more or less honourable livelihood by their writings around the social conundrums of the day. It probably pays best to use a large brush, and to begin with the word *alarming*. It is also an opportunity for the Member of Parliament with a question to ask. The Commissioners in Lunacy of the three Kingdoms have done their best to inform and reassure, but the staid and guarded results of their investigations are not effective in ending the discussion. Besides, it is easier to ask a crisp question than to study voluminous blue books. Imagine the popular outcry if the unrecovered persons discharged from general hospitals had to be kept for life in those institutions, and the resulting dread of national *degeneration* !

I cannot regard it as possible to answer the question until to each insane person recorded in the registers of the Commissioners has been assigned one number, and no more, and until the asylums of the country use these individual numbers in any statistical returns they may make for collective investigation. The crime of the country—the criminal offences committed—is a question apart from the number of persons committing these crimes. A system of law which has regard



to the crimes rather than the criminals is defective and uninformed ; and a system of medicine which is occupied with diseases rather than diseased persons stands condemned by its own ineptitude.

No doubt the physician may take credit for cure, the return of his patient to the ordinary activities of life—always under the full understanding *je le pansay, Dieu le guerist*—but if we are to see life sanely, and see it whole, we can call no man happy until he is dead. Even in this last event suspicion may lurk.

OBSERVATION 1773.—Female, unmarried, æt. 50. Admitted in 1879, labouring under delusional insanity of an apparently intractable type. Hereditarily strongly predisposed to mental disorder, she exhibited the usual features of climacteric insanity of persecution. She was, as the French say, a persecuted persecutor, and so remained for eight years, when she made a good recovery and returned to her usual life of social and charitable interests. Seventeen years after her recovery, at the age of seventy-five, she returned to asylum care, a typical case of senile melancholia. In the course of a year or so recovery was again recorded. But for survival to the age stated she would have been regarded as a final and satisfactory recovery. No doubt the case is somewhat exceptional—firstly in regard to the delayed recovery from a delusional condition, apparently fixed, and secondly, as a relapse into insanity of a different type at an advanced age. A recurrent case is generally more steadfast in symptoms, which, almost always, are reproduced in unvarying succession in succeeding attacks.

It is therefore very difficult to attain such a degree of exactitude as is desirable, and the methods of applied mathematics are placed at a disadvantage in dealing with these problems. Further, the number of observations at my disposal is so small that any deductions must be made with reserve. The element of error, of course, increases as numbers diminish. On the other hand, the studies on which these conclusions are based have an advantage of more intimate and revised personal knowledge than those drawn from wider sources. After dealing with patients belonging to the middle class of Scottish society, throughout a long residence in the county of Perth, it appears appropriate to give some account of that experience as a retrospect.

In 1905, in the Presidential Address to the Section of Psychological Medicine at the British Medical Association meeting in Leicester, I laid before the Section the results of studies in heredity, and then expressed the hope that I should be able to follow out the histories of these cases as successes

or failures. This occasion seemed suitable, and I therefore returned to the cases reported upon at Leicester, and have reproduced certain tables made for that purpose. The cases submitted are those under my care during twenty-five years—from 1880 till 1904 inclusive—and include those resident in Murray's Royal Asylum at the beginning of 1880.

I have omitted voluntary patients with some reluctance. The hereditary and other causal factors are so similar, and the facts are so much in accordance with those observed in the certified class, that they might well have been treated as a whole. There is a similar tendency to relapse, and the broad results generally resemble those of the certified class, especially of late; for year by year the number of voluntary patients increases—certain persons who formerly would have been certified preferring the less formidable arrangement. The somatic complications, too, are practically the same. When I gave evidence before a Departmental Committee, and entered upon a consideration of these somatic conditions, Sir Charles Cameron, the chairman, remarked, "You must have got hold of a particularly diseased lot." That is the position I still maintain; those suffering from insanity are particularly diseased, and if all the apparatus of our hospitals for the insane is not bent to the elucidation and treatment of bodily disease they are *pro tanto* medical failures, obvious and indefensible.

On the other hand, the introduction of voluntary patients would have raised questions as to the relative or comparative value of these conclusions, since it is usual to exclude them from the annual statistics of asylums.

I therefore find, as formerly, that the numbers under consideration are 419 men and 390 women, being a total of 809 persons. For the reasons I have already indicated the readmissions are excluded. They are the same persons returned to us for one reason or another. They may have relapsed, or their reappearance may be due to other causes—such as temporary absence in other asylums for medical or social reasons. The record of readmissions is generally purely official and of slight scientific importance.

It is true that of late attempts have been made to bring transfers from one asylum to another and readmissions into scientific categories. No doubt it is important to discriminate between the various official classes for official purposes, but

these purposes are not relative to medical science. We are concerned with the conditions on first attack, on recurrence of attack, and not with the mere accidents of placement. The number of readmissions into asylums bears but an indefinite relation to occurring insanity, and is no true indication of the tendency to relapse. Nor are the first admissions an indication of first attacks. Meanwhile it is sufficient to state that 195 persons out of 809 were relapsed cases before their first admission into the Perth Royal Asylum, and I have no doubt that careful investigation would establish similar results elsewhere.

I therefore concentrate attention on 809 persons, and not on 982 cases.

Subject to these limitations, and proceeding on the foregoing general principles, I now desire to examine certain statistical tables which have been prepared as a brief analysis of medical observations for a period of twenty-five successive years—from 1880 till 1904 inclusive.

Reference to Table I will show that recoveries were recorded in 31 *per cent.* of both persons and cases, that deaths were recorded in 17 *per cent.*, and so on. But these are not true vital statistics; they are merely official statements, good only for the instant of making them. It is necessary to regard these persons more closely, and to record the life histories in so far as possible.

Table VI, to which I shall refer in detail, has been formulated as an attempt to show final results. It is my advantage to have been able to keep in touch with many discharged patients, and I have been repeatedly and greatly obliged by my colleagues in their sending me information relative to transferred cases. The two years which have passed since 1904 have brought me further information regarding patients previously under treatment, and while it is as yet too early to close the records, it is possible to add to the facts contained in our official registers.

Any study of insanity must begin with a consideration of heredity—the earliest conditions affecting the organism. I therefore reproduce certain tables, and adjust them to additional information, for the neuropathic heredity is noted throughout the statistics prepared for these lectures. We have to determine the effects of heredity, in so far as possible,

in elucidating questions of prognosis. Is heredity effective in one direction or another in relation to recovery, relapse, incurability, and expectation of life?

Table II shows the incidence of neuropathic heredity in 809 persons observed. It has been found useful to divide it into three periods, and I lay greater stress on the accuracy of the last period (from 1895 till 1904 inclusive)—that is, a term of ten years. Taking the table as a whole, however, the percentage of those with a hereditary history of insanity may be stated as 45, while the inclusion of the whole neuropathic heredity increases that number to 72. It is a narrow view of the heredity of insanity which does not include the occurrence of the graver neuroses, want of mental balance, eccentricity, alcoholism and paralysis. These manifestations in one generation so frequently issue in pronounced insanity in the succeeding generation that the nature of the incidence is obvious. This opinion might be supported by very many cases, and I select a few illustrations:

OBSERVATION 1805.—From neuroses to insanity. Paternal grandfather neurotic. Father insane; married a neurotic person, whose sister was also neurotic. The family of these consisted of three persons—two incurably insane women and a son who died early from alcoholism.

OBSERVATION 1635.—From eccentricity to insanity. Father eccentric. Mother eccentric. The family of these consisted of four persons—three incurably insane and one dead in infancy.

OBSERVATION 2627.—From alcoholism to insanity. Father alcoholic. Mother normal. The family of these consisted of six persons—two insane, two died young, and two reported normal.

OBSERVATION 2549.—From paralysis to insanity. Father died of paralysis. Mother died of cardiac disease. The family of these consisted of five persons. The eldest son died of paralysis, the second died in infancy, the third reported normal and alive, the fourth incurably insane owing to degenerative disease of the brain, and the fifth died young.

It has been objected that paralysis is not necessarily a disease involving mental aberration, but that must be relative to the exact situation of the morbid process, and what is exactly meant by insanity. Nothing is more common in the practice of the physician than to find a certain mental degradation in cases of cerebral paralysis, but, of course, it is a relatively small proportion who require the care and control of an asylum.



I believe that these objections are largely due to the limitations of the official mind, to which I have already referred. At any rate, when one finds records of 191 cases of paralysis among the near relatives of 623 insane persons it is evident that the facts cannot be explained away as merely accidental.

There is an important class of insane patients who become insane consequent upon arterio-sclerosis, or other degenerative changes in the blood-vessels of the brain—cases in which the cerebral circulation, nutrition, and function are deeply affected, and issue in a group of symptoms recognisable as a whole.

We have to deal with a condition which has certain hereditary relations, owing to a defect of organisation, and comparable with arterio-sclerosis, gout, and other diseases of obscure causation. It is not the crude heredity of yesterday, but a failure in development or metabolism, or a weakening of somatic defences, apparent in early life, in the period of development, in the stress of maturity, or in the decay of old age. And the more marked the parental defect the earlier will be the failure of the new organism, exactly in conformity with the vital statistics of gout.

We are so accustomed to think of somatic stigmata and congenital idiocy as inborn defects that it is easy to misinterpret the true nature of these failures. So far as I can see, the defect is of the same intrinsic nature, whether the mental disorder be manifested in early idiocy or delayed until senility. There is no adequate reason to deny the existence of prenatal toxins, assuming that toxins are effective in the production of cerebral disturbance and later insanity. By the hereditary nature of insanity I therefore mean the inborn defect which is manifested under certain conditions in the existence of the organism. Not, crudely, that fatuous and furious persons are so conceived, but that their defect of organisation is such as renders them liable to fatuous or furious manifestations throughout the course of their existence, when subjected to certain morbid influences.

Dr. John Macpherson lately declared, before the Royal Commission on the Care and Control of the Feeble-Minded, that "feeble-mindedness is a variation which tends to propagate itself, and, further, that it is useless to attempt to extirpate it by cutting short the existing obviously defective families." Dr. Macpherson has so recently addressed the College on this

subject that I need not recapitulate what is already well known. The point for me is, that heredity works out in two directions—for better or worse. We hear so much of the latter that the former is neglected, or but partially recognised. The nimble rectifier of social diseases is always ready with worse remedies.

I look back upon the time of my university education—how small a part of professional life—as a time when scepticism was insistent and rebellious. I learnt to write prescriptions in the grand manner for examination purposes, but with mental reservations always. *Vis medicatrix nature* was the still, small voice which influenced many of us, and which still, with a wider, a more scientific, and a more capable method, dominates my medical intentions. Glib talk about the extinction of families and the eradication of undesirables must be balanced by the reasoned knowledge of natural processes. On the one hand, we can discern the ruin and decay of families, in spite of the constant effort of nature at reconstruction and rehabilitation; on the other hand, by the prepotency of new blood and a more favourable environment there is a reversal of the process, a rehabilitation just as important and just as certain. Of course this cannot be demonstrated by the statistics of asylums, and the official mind—"subdued to what it works in"—is obsessed by the calamities and the degradation of human nature. I daresay that the physician in daily and intimate contact with general diseases suffers the same disadvantage, for it seems to me that there are those who have finally concluded that the world was made for doctors, and that disease is inclusive in the natural order of things, constituting the best of all possible worlds.

Let us consider this question of *regeneration* at its worst. Chart 4 shows the families of neuropathic parents as derived from asylum statistics. It illustrates, by the way, the necessity for immediate reform in our method of recording insane individuals only. It further illustrates the true incidence of heredity at the time of observation, and is so designed. Thirty-eight neuropathic fathers had 240 children: 47 *per cent.* were sane, 29 *per cent.* were insane. Forty-five neuropathic mothers had 239 children: 42 *per cent.* were sane and 39 *per cent.* were insane. I have also recorded those most heavily burdened, the double heredity shown in the families of twenty-eight neuropathic fathers and mothers—145 children, of whom 33 *per cent.* were sane and 44 *per cent.* were insane. Even in this

disastrous class the efforts of nature towards regeneration are obvious. The race tends, as Dr. Macpherson showed, to maintain average characteristics; but, as Professor Karl Pearson has indicated more recently, there is probably an intensity of correlation between want of mental balance in parents and offspring from about 0·25 to 0·30—similar to the correlation between parents and children in regard to other and directly physical characters (stature, colour of eyes, etc.). It is just here that our statistical information generally fails, for the records of special hospitals must be replaced by the statistics of the general population taken at random, and I deeply regret that work of this importance is left to a few enthusiasts instead of being undertaken by the medical profession as a whole, in furtherance of biological and sociological knowledge. This method of research does not apply merely to insanity, but to all those constitutional disorders, to all those departures from the normal which are of the greatest national importance. Until a collective investigation of the kind is completed and analysed it is vain to attempt any final prognostic in heredity. If vital histories of families, with medical details of their normal and abnormal members, could be extracted from clinical records and reluctant memories, to the number of some thousands, the inchoate condition of our opinions in reference to heredity would be reduced to order and some degree of precision.

It has been my practice, so far as possible, to construct graphic charts of each family under observation, and these have been submitted to Mr. David Heron, whose important study of the *Relation of Fertility in Man to Social Status* gained a wide and appreciative audience last year. Mr. Heron has kindly formulated Chart V, which shows the incidence of insanity in regard to individuals—one member of each family at least having been insane. The chart, with the appended table, shows the absolute and theoretical numbers, if no bias. It would appear that the incidence bears heaviest upon the eldest members of the families in fraternity, and that there is a fairly constant diminution of frequency as the families increase in size. I am not aware that this calculation has been made previously—in fact, the methods of applied mathematics and the working out of problems of probabilities in relation to biology are as yet in an early stage of development. The important

biometric system advocated and instituted by Professor Karl Pearson will greatly enlarge our knowledge and correct our prepossessions, if the desirable data are forthcoming. We only require a collection of accurate facts in sufficient numbers to reduce the margin of error.

## LECTURE II.—STATISTICAL.

I now submit a sheaf of tables and charts which condense the various observations to which I desire to direct attention, and pass to Table VI. It will be observed that all cases of gross pathological nature have been deducted, and that the remaining cases of obscure pathology only are tabulated.

First, all cases in which alcoholism had a part in the etiology of insanity are set aside, whether these were cases in which the toxic effects of alcohol were symptomatic of the underlying malady or truly causative. The prognosis of alcoholism is indefinite and generally unfavourable. Fundamentally these persons are deeply affected by hereditary predisposition to abnormal conditions. Table XVII is designed to show this. It will be observed that of 110 alcoholic certified and voluntary cases investigated nearly 43 *per cent.* were hereditarily predisposed to insanity, and nearly 22 *per cent.* to alcoholism. The total neuropathic heredity was 70 *per cent.*, and I have no doubt that this percentage would be increased by further exact information. There can be no doubt that the alcoholic patients received into the asylums of the country are generally and heavily burdened with a morbid heredity, and that their failure is analogous to that of the ordinary insane—a failure inherent in the organism and often made more manifest by environment. I am not discussing drunkenness apart from insanity, regarding which my opinions have been repeatedly and energetically expressed—that it is a vice to be reformed rather than a disease to be cured. The insane drunkards are a class apart; for instance:

OBSERVATION 2459.—Male, æt. 59, a highly-placed official, on the point of retiring on pension. Mother suffered from recurrent mania from adolescence. The patient was admitted with the ordinary symptoms of acute alcoholism. When these wore off a deep melancholia with strong suicidal impulses was revealed. He informed me that he had been the victim of recurrent melancholia throughout his adult life, and



had combated that morbid condition by means of whisky of the best quality in increasing quantities as the attacks became more pronounced. In the intervals he was practically a total abstainer. In the stress of winding up his affairs preparatory to his retiring a very severe attack of melancholia had supervened, and the great amount of whisky he had consumed had induced or superadded the acute alcoholism which blurred the clinical picture. Throughout his long service his true condition had remained absolutely unknown, even to his most intimate friends. He eventually committed suicide, a common termination in alcoholism.

OBSERVATION 2667.—A professional man, æt. 49, admitted in a condition indicating advanced degeneration of the brain. He belonged to a neuropathic family, but had been successful and exemplary in all relations of life until he rather suddenly, about six months before admission, began to exhibit signs of moral and mental degeneration, which his family attributed to excessive drunkenness. *Post-mortem* a tumour of the dura mater was found pressing on the right frontal lobe, described by Dr. Ford Robertson as composed of dense fibrous tissue proliferating rapidly after slow growth for many years.

No doubt these are marked cases, but they indicate clearly that the underlying condition of insane alcoholics is deep-seated and definitely pathological. The true dipsomaniac, usually characterised by periodicity of attack, is an insane person, usually—I may say *always*—of neuropathic ancestry.

A Fellow of this College cannot speak on this subject without a brief reference to the recent death of Dr. Alexander Peddie, by which an honoured name is removed from the Roll. He was one of the first to insist upon the true pathological significance of dipsomania. His writings arrested public attention and left an indelible mark.

The next column of Table VI relates to general paralysis—a disease which is practically incurable and comparatively rapid in its course. It is generally preceded by syphilis, often by alcoholism. Dr. Ferrier has discussed this so fully and so recently that I need not enter on it here, especially as his conclusions command my assent. I would just note in passing that by observations of lymphocytosis he has been able to diagnose general paralysis before the pupillary symptoms, etc., were established. In Table VII—a statement of correlations—it will be observed that out of forty cases twenty-three were undoubtedly syphilitic, and fourteen were alcoholic. There is in our records presumptive evidence of syphilis in seven other cases. The exact truth is hard to find :

OBSERVATION 2508.—A man, æt. 46, was admitted in the maniacal stage, with the usual grandiose delusions and motor symptoms. There was no personal evidence of syphilis, and it was strenuously denied by his wife and himself. Later his wife admitted that he had acquired post-nuptial syphilis and had been treated for it, but that he would not continue the medicines prescribed. This patient, in the stage of dementia, fractured his femur in the middle third by the muscular exertion of delivering a bowl in the course of a game. The degradation of body and mind was complete, and I see no difficulty in correlating the effects of syphilis with the manifestations of general paralysis in these cases.

Three general paralytics were, in the first instance, cases of gout of a marked type, and it seems to me that the effects of gout may be similarly correlated. I do not lay much stress on sexual excess, and have correlated exhaustion with two cases only. The prevailing mental complication in causation is *worry*. It is so general as to be almost inevitable in my experience, but I shall refer to mental stress hereafter, merely remarking here that worry does not stand in our records as a sole causal factor.

My experience leads me to believe that the hereditary factor is of importance in general paralysis. It used to be regarded as not a hereditary disease, an opinion which must be revised, if my experience is common, for in reference to these forty cases of general paralysis the heredity of insanity finds expression ten times, eccentricity four times, neuroses twelve times, and alcoholism fourteen times. Rheumatism, gout, and tuberculosis are also noted. There was a distinct neuropathic heredity in thirty-two cases.

OBSERVATION 2614.—Father died labouring under senile insanity, mother neurotic. Patient acquired syphilis and became a general paralytic. Fraternity: two deaths in infancy, one sister asthmatic, one sister neurotic.

OBSERVATION 2421. Atavistic. Paternal grandmother was insane in senility. The patient was first alcoholic, and then developed general paralysis. Presumptive evidence of syphilis.

OBSERVATION 2379.—Transformation of neuroses. Father normal, mother neurotic. The patient acquired syphilis and developed general paralysis. Fraternity: eldest insane and paralysed, second eccentric, third, fourth, and fifth normal, sixth general paralytic, seventh died sane.

OBSERVATION V 76.—Maternal grandfather and grandmother alcoholic, only daughter (the mother) neurotic. Father a general paralytic, his brother's daughter neurotic—an infantile paralytic. Patient general

paralytic, alcoholic, and syphilitic. Fraternity: one sister neurotic, one brother alcoholic—a suicide.

I need not multiply these illustrations, but might note in passing that the onset of general paralysis in two cases occurred after severe influenza, and in one case after malarial poisoning. I lately had occasion to send a specimen of a heavy brain (60 oz.) to Dr. Ford Robertson for report. The patient was a congenital imbecile, who had died of influenza at the age of 59. There was no evidence of neuroglia overgrowth, but the changes in the cortical cells were recent and acute, apparently connected with the acute toxæmia from which the patient died.

It would seem that while general paralysis is most frequently subsequent upon syphilis, alcoholism, the wear and tear of unrestricted urban life, it may find a suitable germinating soil in various diseases of an exhausting nature. Both cases of influenza noted were, however, syphilitic. The toxæmic state of influenza may, however, have been a final factor, just as it has operated so frequently in cases of ordinary insanity.

In the earlier stages general paralysis is most difficult to diagnose, especially if co-existent with chronic alcoholism. If antitoxines are to be of real service they must be employed at a very early stage, before degenerative changes have occurred to any marked extent.

I have, however, been fortunate in having discharged recovered two cases of syphilitic insanity occurring after alcoholism and presenting paralytic symptoms.

A full account of these highly exceptional cases was published in the *Journal of Mental Science* for 1887. Both were maniacal, but neither exhibited grandiose delusions nor were the pupils characteristic. One was treated with green iodide of mercury, the other with iodide of potassium. The former died of epilepsy sixteen years after discharge, æt. 50. He was not technically insane, and lived at home with his wife and family. There was, however, some slight mental dulness after epileptic seizures. Unfortunately, I lost sight of the other on his leaving the country, but for some years after his discharge I had letters from him and his medical attendant assuring me of his well-being in every respect. Voisin has reported similar cases to the number of fourteen.

Turning to the cases of epilepsy reported, it will be seen that they are few in number, and I must add that all do not repre-

sent the ordinary cases of epilepsy which crowd the wards of the great English county asylums. The number reported in Table VI is twenty-four—twenty men and four women. Regarding these more critically, the cases of ordinary uncomplicated epilepsy only amount to five. Eleven were cases of alcoholic epilepsy—a condition implying such a degeneration of nervous elements as practically precludes the possibility of recovery. This is not an invariable result, however. The following case is unique in my experience :

OBSERVATION 2444.—A farmer, æt. 44. Admitted in a condition of alcoholic dementia. Physical state very bad, mitral incompetence, sprawling gait. Had acute rheumatism eight years previously. Had been drinking from boyhood. Father and mother both sober. The former was aged when married. The latter died aged of paralysis. Fraternity : brother died of cardiac failure after long suffering from asthma, sister died in child-bed. The patient was the youngest, married, with no children. He had delirium tremens three years and two years previously, and had at least three epileptiform seizures shortly before admission. The mental attack began with mania, and he was brought to the asylum suffering from alcoholic amnesia and in a very precarious condition, tongue black and dry, bowels obstinately constipated. It was one of the few occasions on which I have considered whisky indispensable. In the course of two months he made a complete recovery. After a lapse of seven years I hear that he is a reformed character, quite sober, and attending to his duties at the age of fifty-one.

The remaining cases of epilepsy were directly due to organic disease of the brain or senile degeneration with the exception of three, which were traumatic.

OBSERVATION 2345.—A sailor, æt. 27, was admitted in a condition of mischievous dementia with epilepsy. Father died of cerebral apoplexy, mother alive and normal. Fraternity : eldest sister subject to juvenile epilepsy which ceased in adolescence, one brother normal, the patient, and one younger sister normal. He fell into the hold of his ship and was unconscious for some weeks, about eight years before admission. The first seizure occurred two years after the fall on exposure to extreme heat in Calcutta. He is reported to have been troublesome and of a low mental standard from boyhood. He died in the *status epilepticus* at the age of twenty-nine. *Post-mortem* there was no evidence of injury to the skull. Dr. Ford Robertson found a slight degree of thickening and opacity of the pia arachnoid over the convexity of the hemispheres. The spinal dura mater was much thickened, especially in the upper cervical region. On the mesial aspect of the right frontal lobe there was a slightly depressed area over which the membrane was thickened and puckered. A large area of softening was found in that lobe, indicated by the depression above noted. Posteriorly it faded away in the lenticular nucleus. It seemed to have been the result of traumatic hæmorrhage.



OBSERVATION V 73.—An Indian official, æt. 34, admitted in a weak and facile mental condition. Family history unimportant, except for angina pectoris in paternal grandfather. Ten years before admission he fell from his horse and was unconscious for ten hours. He thereafter slowly changed from a capable, hard-working man to a person of listless habit. Nine years after the injury he had a fit which incapacitated him from duty; subsequently several severe fits and daily *petit mal*—a momentary clouding of consciousness. The aura was marked, a feeling of the epigastrium rising to the fauces and choking him, this accompanied by an unpleasant taste, and a further feeling of his head being involved. He became very childish with marked amnesia. Right forearm pronated and trembling—a condition which at first could be inhibited by attention and control. The right side was markedly affected in convulsions. The right leg became affected. Mr. Cotterill operated and found a patch of opalescent membrane over the left motor area and evidence of high tension within the membranes. There was a distinct improvement in the motor and mental symptoms for a time after the operation, but in the course of some months he declined and fell into a state of general mental degradation, and died in an epileptic seizure at the age of thirty-eight. Dr. Ford Robertson reported on the cerebral membranes at the time of operation, having found them to consist of many bundles of dense, fibrous tissue containing a small number of capillary vessels, the result of a chronic inflammatory process. *Post-mortem* the membranes were still more affected, and an infiltrating glioma of the left cerebral hemisphere was discovered. Dr. Ford Robertson was of opinion that the growth had begun in the island of Reil, the whole of which was affected, as also were the frontal and temporo-sphenoidal lobes, the basal ganglia, the whole of the cornu ammonis, the white matter of the centre of the parietal lobe as high as the corpus callosum, the cortical surface of the anterior third of the temporo-sphenoidal lobe and the tissues in the interpeduncular space. The usual pathological conditions of the nerve cells were noted.

These cases of epilepsy, then, whether obscure in origin, or alcoholic or traumatic, are definitely of evil omen as regards prognosis. If the exhibition of bromides do not arrest the march of the morbid symptoms there is little hope that hospital treatment can do more than care for a disease which is progressive and fatal.

It is interesting to note, however, that senile epilepsy in the insane has been resolved into two factors of the same nature as true epilepsy by Dr. John Turner, *viz.*, an unstable condition of nerve cells, and a condition of stasis or cerebral anæmia resulting from arterial disease—endarteritis obliterans. The thesis of his important paper just published is that the blood of epileptics is abnormal and characterised by a special tendency to intra-vascular clotting.

The group of coarse organic diseases of the brain need not

detain us. The recovery of a patient so seriously damaged is a very rare occurrence. I can find but one instance on our records.

OBSERVATION 1901.—A man, æt. 65, was admitted with evident symptoms of organic disease of the brain. Father died of cardiac disease. Ten years previously he was irritable and depressed for a time. Four years previously he had a fit followed by mania with aphasia. For a considerable time before admission he was exalted and excited in conduct, alternately with periods of depression and taciturnity. Tremors of the tongue, thick, indistinct speech; left-sided ptosis were marked. After a moderately severe attack of mania he made a good recovery in three months. He returned to his home and went about his affairs as usual. No doubt there was some deterioration mentally, but he was quite able to conduct himself rationally, until he was carried off by an apoplectic seizure and paralysis of short duration some months later. This case is also remarkable as a recovery after a period of Cheyne-Stokes' respiration.

It will be observed that twenty-six cases of traumatic origin are reported, as usual, mostly in men. I have included cases of insolation, where there was a probability of that cause having been effective. It is well known that no insane patient who has visited the tropics can be admitted to an asylum without a history of sunstroke. It is a facile explanation. Unfortunately my experience is that these traumatic cases are of the most serious import. Dr. Van Gieson investigated many of them in New York, where it is common to find a person stunned and senseless from a blow given by a piece of lead wrapped in flannel, which leaves no external mark whatever. He found it impossible, *post mortem*, to distinguish between a brain so injured and a case of insolation. The pathological changes were invariably those of early and widespread degeneration of the cortical cells.

I have also deducted the class of idiots and imbeciles, as persons who by early defect are absolutely incurable, and of no special interest in this relation.

Table VI therefore properly begins with a consideration of 554 persons suffering from ordinary insanity, as distinguished from 255 persons of obvious pathological significance. Further, it will be observed that the incidence of these pathological cases bears heaviest on the male sex, and illustrates the lower recovery-rate and the higher death-rate for that sex. The particular incidence of alcoholism, general paralysis, epilepsy, organic brain disease, traumata, and even idiocy recorded here is by far more excessive in affecting men than women. I need not

discuss the underlying reasons for this excess; it is a well-established fact, and, of course, broadly renders prognosis graver for men than for women.

The numbers for ordinary insanity, therefore, stand at 235 and 319 out of the totals of 419 and 390 for males and females respectively.

The second part of Table VI deals with these cases of ordinary insanity from the point of view of *stress*. I have been accustomed to classify all cases as *innate* or *acquired*, and also as affected by mental or physical stress. Naturally a case must be either innate or acquired, but if there be no evidence obtainable as to neuropathic heredity the entry is made under "acquired." This leaves a large margin of probable error, familiar to all concerned. The total neuropathic heredity, as I have said, reaches 72 *per cent.* of the persons received, and no doubt more accurate information would enlarge that percentage materially, and, of course, at the same time diminish the numbers under "acquired."

Previous observers have recorded the heredity of insanity only. Dr. Hack Tuke calculated the percentage as 20.5 out of 136,478 admissions into English asylums; but that must be regarded as much too low, for we know that those returns are absolutely untrustworthy. Dr. H. Grainger Stewart reported 49 *per cent.* out of 901 cases at Dumfries; but he included eccentricity, and, so far as I can learn, was the first to recognise this particular form of want of mental balance as definitely important. Dr. Savage recorded 34 *per cent.* in Bethlem Hospital out of 1072 persons. Dr. W. F. Farquharson recorded 30 *per cent.* out of 3907 admissions to the Cumberland and Westmoreland Asylum. The percentage of insanity alone in my experience is 45, but it must be noted that in the latest period of observation it rose to 48 *per cent.*

With regard to mental and physical stress, these are noted when apparently of definite importance in etiology. Now severe mental strain, sudden or prolonged, is inevitably put forward as the cause of insanity in the history of every case in which it can be alleged. It is analogous to the similar assertion as to sunstroke in the case of a patient with a tropical history. Is it really effective in the production of mental disorder? I think not.

OBSERVATION 2523.—A drunken ne'er-do-well deserted his wife and

two daughters and disappeared in early life. The daughters moved from old associations and set up a small millinery business by which they supported their mother and themselves. In old age the business still continued, although not quite so remunerative. The elder sister, æt. 65, began to worry about their future; she could see nothing but disaster and poverty before them. No doubt there was a substratum of fact in this, but it is to be noted that the younger sister did not take that gloomy view; she did not refuse food and prefer death. Indeed, she still carries on the business, and is a well-nourished and cheerful person, in spite of having been the victim of a street accident and greatly shaken. On examination of the patient, however, the usual somatic conditions were revealed. A long course of ill-considered dietary and overwork had resulted in a chronic gastritis, with a dry, cracked tongue and habitual constipation. The pulse was feeble and rapid, with a slight roughening of the aortic sound and atheromatous arteries. She was also reported to have had several slight epileptiform seizures. It is also to be noted that she sustained an abrasion of the ankle, which she neglected, and had at length to remain in bed until it healed. *There was no morbid mental symptom until she had been in bed for some time.* The history of the case was towards progressive bodily and mental degradation, until death at the age of 68. *Post mortem* the brain showed the usual degenerative changes, the left ventricle of the heart was greatly hypertrophied, the arteries were atheromatous, and the stomach and intestines showed patches of chronic inflammatory changes.

The mental stress to which these sisters were exposed was not more severe on the one than on the other. The facile explanation of her malady was ineffective and misleading.

Or, turning to mental stress of a sudden and unforeseen nature:

OBSERVATION 2148.—Female, æt. 41, admitted in a state of recent mania, said to have been caused by her brother-in-law coming home drunk and jumping with a child from a window. Investigation showed that she had previously suffered from acute rheumatism, and had been delirious in the course of the attack. She thereafter suffered from gastric troubles, irregular appetite and constipation. She was sleepless and the catamenia were deranged. She went to visit her sister in the hope of a change proving beneficial, when the drunken act of her brother-in-law apparently determined the further course of her malady, from which she made an excellent recovery. Her heart was undamaged by the rheumatic trouble, and under ordinary care and treatment she soon made progress.

In the light of these experiences I have therefore critically examined the cases in which mental stress was alleged, and find that the almost inevitable complement to mental stress is innate or congenital defect. If a person is entered under "mental stress" he is almost inevitably entered under "innate." Sixty-



four instances of this combination are recorded. On the other hand, the combination of acquired insanity with mental stress alone is extremely rare. Three cases are recorded, and they are so recorded before my appointment to Murray's Asylum. They may be briefly mentioned: one a case of adolescent dementia who developed epilepsy in maturity, and died in the status epilepticus; one a case of adolescent melancholia who remains resident in a condition of senile dementia; and one, a case of ordinary melancholia at the age of thirty, who has long been lost sight of. They rather tend to support my conclusion.

The study of insane persons, in my opinion, must be mainly referable to the conditions of physical organisation, and the conditions of physical pathological processes.

But it will be objected that great sorrow, great affliction, great mental trouble must necessarily affect the somatic processes, and must be of weight in determining the pathological event. It is a common observation that worry has a place, and a very important place, in the genesis of general paralysis. To that I can only reply that it is not within my experience that a person of good ancestry, sound in mind and limb, is overwhelmed to the extent of the mental reduction recognised as insanity. There may be cases where mental stress alone has so affected the somatic condition of nutrition and repair in a previously normal individual that the defences are broken down or destroyed, and that insanity arises in a secondary manner. I have not been able to discern such a case among the 809 persons regarding whom these studies have been made, nor can I find a case in the records of my consulting practice, in which, of course, one sees many patients who never require the care and control of a special hospital. I cannot therefore corroborate the statement that prolonged mental stress is of evil omen in prognosis.

I shall not detain you with an examination of the totals or percentages given in Table VI, which must be submitted with diffidence owing to the comparative incompleteness of the information on which it is founded. It is evident that final results tend to show that the innate or hereditary cases recover in fair proportion, although they are more subject to relapse than the acquired. This has been widely recognised, but I do not know that the heavier death-rate among the acquired cases

has been shown before. It may be that the more severe causal factors requisite to issue in insanity in persons not congenitally predisposed find expression in this way.

I might here repeat that the forms of mental disorders as named are used quite loosely: melancholia for cases chiefly characterised by depression, whether excited or not; mania for cases chiefly characterised by excitement or exaltation, whether depressed or not; delusional insanity for those cases dominated by delusions, generally systematised and fixed; dementia for those cases of mental enfeeblement generally issuing in terminal states, including *folie circulaire*, which always in the end tends to enfeeblement more or less pronounced. *Recent* means that the malady on reception of the patient was of less duration than one year. The recovery rates of melancholia are 33·79 and 13·51, having regard to recovered and relapsed cases in innate cases, and 28·13 and 7·81 in acquired cases. On the other hand, the recovery rates of mania are 31·16 and 24·64 for innate cases, and 39·62 and 13·21 for acquired cases. The recoveries from delusional insanity and dementia require closer scrutiny.

OBSERVATION 2180.—A farmer, æt. 27, admitted after an irritable period characterised by delusions of persecution, which had lasted for six months. Father alcoholic, two aunts insane. His delusions were well marked and apparently fixed; he was under the influence of unseen agency by means of a “norapath” for collecting sounds. These delusions persisted for nearly twelve months, when he was discharged recovered. It was a question whether he did not effectively conceal his delusions, but they did not at least interfere with his work or conduct in life for many years thereafter.

It is open to doubt whether the female demented entered as recovered should have been included in this category, for certainly both were alcoholic.

OBSERVATION 2281.—A married woman, æt. 28, with three healthy children. About two years before admission developed psoriasis and persistent vomiting, with want of appetite and gravely impaired nutrition. Six months *later* she took alcohol to excess, and so continued until peripheral neuritis and dementia supervened. She walked with a feeble, shuffling gait, her memory was a blank, she did not remember her children. Mentalisation was extremely slow, and her reflexes were generally dull. Under thyroid treatment her memory returned, the psoriasis disappeared, and she made marked and rapid improvement. A foul, purulent discharge from the vagina was successfully treated. She was sent home perfectly recovered in 1895 and so continues. There was no indication of syphilis. I believe that the alcoholism was

subsequent to, and consequent on, the earlier symptoms described. Still, there had been excessive drinking, and, as I have previously said, the prognosis in such a case is most doubtful.

We may now glance at the *age period* of Table VI in relation to *final results*. It will be noticed that I have grouped these periods as adolescent (up to 25 years of age), mature (up to 40 years), climacteric (up to 60 years), the senile cases having been already separated. With regard to the group of melancholias the adolescents are in a marked minority, while the period of maturity exceeds that of the climacteric, the absolute numbers being 40, 97, and 75. The position is reversed for cases of mania by the numbers 83, 78, and 69. The percentage of recoveries from melancholia tends to diminish as the age periods increase—a condition of affairs directly the opposite in reference to mania. The tendency in regard to all the death-rates is towards an increase with age, the adolescent naturally showing the lowest figures.

I infer that the slight mental reduction of melancholia in youth is eminently curable, for if we add the recoveries and relapses the total is 62 *per cent.*; but the deeper reduction of mania, even omitting the development of dementia, is less likely to end favourably by 11 *per cent.* This table, however, relating to the more recent cases of adolescent insanity, cannot be considered complete, the period having ended with 1904, and the results having been only carried down two years later.

The following abstract of Table VI is of some interest :

	Total Nos.			Pathological.			Ordinary.		
Melancholia	115	150	265	29'57	12'66	20'00	70'43	87'33	80'00
Mania	149	154	303	51'01	23'38	36'96	48'99	76'62	63'04
Enfeebled	144	83	227	43'75	15'66	33'48	56'25	84'34	66'52

Table VII is designed to show certain associated conditions found on first admissions in various correlations. In our search for a definite cause for insanity—an indispensable factor which can be found in every case—there is a certain impatience in the consideration of multiple causation. I do not consider that this is a reasonable attitude, nor is it likely to be appropriate in the prophylaxis of insanity. The contributory causes are certainly of sufficient importance to demand careful investigation in each individual case, and I have, therefore, constructed this table as a *résumé* of their

incidence in association. As the table stood originally it occupied great space, having been carried to final results in each column. I submit a condensed copy which is sufficient for the present purpose. It refers to all forms of insanity in 809 cases. The total neuropathic heredity (581 cases) is thus seen to be effective in combination with other causes; for instance, it is pre-eminent in epilepsy, general paralysis, alcoholism, gout etc., tubercle, syphilis, traumata, and even in senile cases of insanity. Again, the association of general paralysis with syphilis and alcoholism is readily determined; the frequent association of tubercle with neuropathic heredity is evident; and the inevitable relation between alcohol and syphilis.

If these combinations are studied in reference to results of treatment the influence of hereditary defect is more apparent in depressing the *final* recovery rate and raising the death rate. While the neuropaths who suffer less important and less vital disorders maintain their favourable position, the combination, for instance, of neuropathic defect and alcoholism, or tubercle, or syphilis, renders the prospect of recovery much less favourable. Taking the less formidable combination of non-toxic exhaustion, by which I mean over-exertion with hereditary defect, the numbers are—from 27 persons 4 recovered, 18 did not recover, and 5 died, or 14, 66 and 18 *per cent.* respectively; or, in reference to syphilis, 7 *per cent.* recovered, 60 *per cent.* did not recover, and 32 *per cent.* died.

It was formerly thought that the association of tubercle with insanity was particularly fatal in results. I have therefore worked out the percentages of neuropathic tuberculosis as follows: In 25 persons—recovered 32 *per cent.*, unrecovered 32 *per cent.*, and died 36 *per cent.* Although these are small numbers and therefore liable to a wide margin of error, I believe that they will be found approximately correct for modern practice. In a period of overcrowding and defective hygienic conditions 13 *per cent.* of all the deaths in the Perth Royal Asylum were due to tuberculosis, nor did that represent the whole incidence of the disease, for *post-mortem* examinations reveal a much larger proportion in present asylum practice. In the period under review the percentage of these deaths was little more than half—*viz.* 7 *per cent.* Modern methods of treatment may be illustrated in results as follows:



OBSERVATION 2488.—A male patient, æt. 28, admitted in a very exhausted condition, with delusions that he is in heaven, etc., restless and excited. Father died of cardiac disease, mother died of tubercular peritonitis. Maternal uncle insane. Brother alcoholic. Phthisis in several members of the family. The left lung was evidently seriously damaged, and his heart was affected by mitral stenosis. A more unpromising case could not have been received. Within two months, however, he was discharged recovered, and he has been engaged in his daily avocation for the last six years. I occasionally hear from him, in good health and spirits.

Table VIII is designed to illustrate the incidence of *occupation and environment*, with reference to *heredity and results of treatment*. The occupations are arranged in the census groups and represent the whole number of persons under care. The stress of life in towns is often unfavourably compared with the idyllic conditions of the country. First of all, it is difficult to decide how to place many of these patients. It seemed reasonable to divide urban and rural dwellers in accordance with the size of the towns—a population of some 5000 being reckoned rural. The usual place of residence for several years previous to admission was regarded as fixing the classification. On that principle, 456 might be considered as of urban extraction and 353 rural. In the former 73 *per cent.* were of neuropathic heredity and 27 *per cent.* were acquired cases. In the rural class 70 *per cent.* were neuropathic and 30 *per cent.* were acquired. That represents no great difference and no marked evil effect of town life as regards heredity. The towns, of course, are steadily recruited from the country, but if neuropathic disorders are degenerate that untoward influence is nearly as effective in the one as the other. Of course I am not dealing with the industrial class, but with a comparatively stable class, which has apparently attained its maximum ratio to the general population, and, at least for some years, has shown no tendency to increase.

When we turn to the nature of the mental disorder, whether ordinary or pathological, we find that these stand in the proportion of 70 to 30 *per cent.* in urban cases, and 81 to 19 *per cent.* in rural cases. The untoward side of urban environment is thus revealed. The effective soil for the germination of insanity was nearly equal, while the evolution of actual insanity was aggravated by the environment, resulting in a difference of 3 *per cent.* in the death rate.

Chart IX is designed to show the *seasonal incidence* of insanity. The usual statistical tables of the months of admission to asylums bear no close relation to the onset of the malady. They are merely official statements, and should be so regarded. The period of importance is not the time of certification and legal interference, but the time of inception.

The onset of insanity has been comparatively neglected; it is obscure, often overlooked, and generally regarded as of little significance. On the contrary, the whole tendency of modern research is towards the elucidation of the prodromal and inceptual periods. If insanity should be proved an affair of toxins, as the studies of competent observers appear to indicate, it will be in the early stages that medical treatment will be most efficacious; even under present conditions that is conceded. I need not labour the point.

If we regard the facts of arterio-sclerosis, which in my belief frequently issue in insanity, we can discern a similar train of causation, a similar importance of early treatment, and a similar degeneration proceeding from innate defect aided, it may be, by toxins, lead, alcohol, or syphilis. Similar agencies are at work, and if the vessels of the brain be affected there is, of course, a relative anæmia resulting in vertigo, confusion, etc., which process may proceed to thrombosis, localised necroses, and softenings.

The pathology of arterio-sclerosis is therefore of great importance in insanity, not only as a cerebral degeneration, but as affecting the brain by an invasion of other vital organs; and its early recognition is essential if the disease is to be stayed and controlled, whether it issues in an anæmic atrophy of the kidney or an anæmic atrophy of the brain.

On the general principles of medicine, therefore, I have always endeavoured to ascertain and record the earliest symptoms of somatic disturbance heralding insanity, and I may say at once, and finally, that in every case these somatic disturbances can be clearly recognised and recorded if one is dealing with persons of ordinary intelligence who have been in close relations with the patient. They are well known: general malaise, gastric and intestinal disturbance, sleeplessness, irritability, inability to go about the ordinary affairs of life, and so on. The fear of impending madness is quite common, especially in general paralysis, and it is soon masked by other mental

manifestations : but the feeling of *bien être* is never a *prodrome*—it is a symptom of declared insanity.

I regard the inception of the attack as the period when these vague prodromata culminate in indubitable insanity—that is to say, when it evolves as insanity from the medical point of view, altogether apart from the question of certification for legal purposes.

It has been found possible to determine this date in 913 cases with sufficient precision. Many years ago Sir Arthur Mitchell constructed a most interesting chart relative to deaths registered under various diseases, showing the seasonal incidence of deaths. Unfortunately, I can only refer to it from memory, but it was impressed upon me as showing the maximum incidence for respiratory diseases in spring, for nervous diseases in summer, and for abdominal diseases in autumn. That was in consonance with the undoubted high prevalence of suicide in July and the low rate for November. The chart which I now submit is more in consonance with still older observations. Dr. Edward Smith (*Health and Disease*, 1861) says that “brain diseases prevail in the cold season,” and he found that writers of the seventeenth century placed diseases of the head and nerves under the sign Aries—that is, April—when, according to ancient writers, diseases began in the head, descending to the throat in May, to the stomach in July, and so on.

If we consider the total incidence in three-monthly periods, beginning with December, the inset in the chart shows a culminating rise till May, when the fall is continuous until November. My impression as to asylum excitement has been that it does not so much depend upon the season as a change in the type of weather—the more rapid and complete the alteration the more marked the effect. But although we have kept charted records of the barometer and thermometer for many years and have attempted to correlate them with the varying conditions of patients, no order has been evolved from the complicated series of facts so dealt with.

To return to Chart IX, it is evident that the points marked are at maximal elevations for April, June, and December, showing a singular abrupt fall in May and a more prolonged fall towards the autumnal months. These 913 cases have, of course, been spread over a period of twenty-five years, and there does not seem to be reason to regard the results as

untrustworthy. The fall in May and the rise in June is inexplicable, especially when it is noted that the charts of recoveries and deaths to be found below show the same regression.

Sir Arthur Mitchell has kindly constructed a chart of incidence on onset for me (No. IXB) which shows a more equable course, for the influence of the preceding and succeeding months of any one month are taken into account. The average is carried out instead of the absolute numbers. The result is a period of greater and lesser intensity in winter and summer respectively, and I believe that this gives a better idea of the total incidence as regards seasons.

I also submit curves for the onset of the male and female cases separately, and for melancholia and mania occurring in males and females separately. From these it would appear that the weather exercises a greater effect upon women than men, and certainly meteorological conditions seem to find them more sensitive in asylum life.

Table X is designed to show the *duration of attack on admission* in relation to ordinary insanity, together with the facts of heredity and results of treatment, correlated with the age-periods. It shows that the cases who are received early and promptly treated are in better expectation of recovery, notwithstanding the hereditary burden under which they may labour, and it thus emphasises what has been already brought out by Table VI. I need not linger over it, as these references have long been emphatically expressed. The results of treatment, whether recovery or death, are mostly crowded into the earlier months of asylum life.

Chart XI is designed to show the *age on first attack*, arranged in quinquennial periods. It will be apparent that the curve rises rapidly from ages less than twenty to the maximum on the completion of adolescence. From that point it falls, with two short increases, to the eventual minimum. These regressions mark the climacteric periods of women and men when the curves for the sexes are separately studied.

Chart XIA shows the *recoveries from first attack* in relation to age on recovery. These have been calculated as nearly as possible for 253 first recoveries, and constitute a curve similar to that of the ages on first attack. This should be read in comparison with the curve for ages on first relapse, although it deals with smaller numbers.



It is certainly disquieting to find that out of 809 persons admitted no fewer than 195 had already suffered previous attacks, as set forth on Table XIII A. It is good reason for a thorough revision of our methods, for a closer study of the early symptoms, and for a revisal of treatment.

The cyclic order of life, the slight diurnal changes in health, are, of course, frequently magnified in disease, and there is a distinct tendency to enter upon, and to continue in a vicious circle of mental disorder. Table XIII A shows how common these *relapses* are. I have stated that nearly a quarter of the whole number received were already relapsed persons on first admission, and may add that 76 of the 173 readmissions were returned relapsed. I am also informed that 18 relapsed after final discharge. Appended to the Table is a statement of the number of attacks referable to 250 persons. Further, the recoveries reported have been regarded as either temporary or permanent, with the result that 38 *per cent.* of the former yields but 17.18 *per cent.* of the latter.

This attempt to arrive at the true recovery rate is worked out in another way, within the limits of asylum statistics, in Table XII. The net recovered persons during forty years are stated at 29 *per cent.*—which is manifestly too high. Dr. Robert Jones (*British Medical Journal*, 1905) stated that 30 *per cent.* recover of the total admissions, and that 28 *per cent.* of the recoveries relapse—rather more than 1 in 4. Dr. Clouston, referring to this, calculated that, excluding the obviously pathological group of cases the majority recover, and of that majority one-third relapse—in proportion similar to cases of rheumatism, gout, and bronchitis; and he further added that given earlier treatment, comparable with that afforded to rheumatic patients, more would recover. But it is this loose use of the word “recovery” which confuses the issues. A hospital recovery from rheumatism or an asylum recovery from insanity is justifiably recorded for the time being; but these diseases of obscure causation have a marked tendency to relapse or recur, and must remain records of failures until our methods of treatment are efficient to prevent these relapses and recurrences. A generation ago Dr. Pliny Earle effectively exposed the absurdities of the statistical methods formerly prevalent in American asylums—methods which resulted in statements of recoveries having occurred at the rate of 100 *per cent.* He

traced the gradual decline of these optimistic extravagances, and endeavoured to guide the specialty into a discrimination between *cases* and *persons*. The hunger for "recoveries" still exists to confound us in statistics. They must be obtained in another way. It is incredible that the methods of a previous generation were capable of inducing better results than the methods of to-day; but I have already, elsewhere, shown that the patients coming under treatment were then more acute in their malady, less aged in their years, and less deeply affected by gross pathological changes.

I have carefully reviewed and considered the recoveries of persons and cases, with the result submitted, and am certain that 17 *per cent.* of permanent recoveries represent the limits of truth in the desirable direction; yet it must be borne in mind that those relapsed cases on temporary recovery have often long periods of freedom from disorder, and are often for years useful citizens in their respective spheres of life.

The *Table of recoveries after first admission* (XIII), correlated with neuropathic heredity, age periods, and duration since first attack, need not detain us. It establishes the fact that recovery takes place in the greatest number of instances within a period of six months. Of course the recoveries noted after a long period of years do not denote first recoveries. The incidence of neuropathic heredity is thus seen from the side of recovery.

I had also prepared a table showing the increase of body weight in recoveries, but it may be summarised in a few words. The mean gain on recovery was 10·51 lb. in men, and 13·43 lb. in women. On the other hand, the mean gain among men removed unrecovered was only 1·00 lb., and among women there was an actual mean loss of 3·79 lb. The important bearing of this observation has been frequently discussed, and I need not revert to it here.

A table of patients removed unrecovered has been omitted, the results being obscured by financial, social, and official incidents.

It will be convenient now to refer to the ages of first relapses, which are also shown on Chart XIA. There is a steady and regular increase in the numbers year by year up to the age of 40, when the line falls until it marks the occurrence of the climacteric. The deaths show nothing peculiar to the

insane on these charts, and they must be studied from another point of view.

One of the questions of prognosis has reference to *expectation of life*. This is of importance in the matter of life insurance, in the matter of financial arrangements made in the interest of private patients, in the matter of asylum accommodation for State-supported patients. Does insanity shorten the life of the individual, and if so, to what extent? Obviously the occurrence of general paralysis decides the question for that class within a year or two, although one could recite exceptional cases of a chronic type. The somatic conditions must be taken into account in individual cases, and broad generalisations must be applied with discrimination. It used to be stated that, granting that the person survived the acute attack, his life in regular and ordered routine would be actually prolonged, and every asylum of old standing records patriarchal ages on death. Dr. Robert Jones (*British Medical Journal*, 1905), investigated the death rate for asylums compared with the whole population, and concluded that death occurs amongst the insane at least six times as frequently as among the sane at corresponding ages. He also found that the average age of men received by the London County Asylum was 42 years, and the average age at death 50·7 years, instead of the normal expectation of 66 years. The results are not quite so gloomy in my experience. I find that the average age on admission for men is 36 years, and the age at death 54·65 years, as against 63·96 years for healthy males, while the average age on admission for women is 38 years, and the age at death 60·93, as against 66·83 for healthy females; but the percentage of deaths on the average numbers resident in Murray's Asylum for the past 40 years is only 6·03 *per cent.*, compared with 7·1 *per cent.* in the London County Asylums.

This question may be approached in another way, and Mr. Mayhew Allan has kindly constructed tables—comparing the percentage of deaths among the insane at various age periods with the Hm. Tables of the Society of Actuaries. Ages 15 to 25 show a better result for insane than for sane; ages 25 to 60 reverse this finding, while the results at ages above 60 return to the adolescent characteristic. The table must be presented with considerable doubt as to margin of error, a separation of the sexes having resulted in still further

doubt, yet it tends to show the heavier mortality for males, as has been previously stated.

Tables XIV and XV deal with the *deaths* in admissions and readmissions. The former shows the general causes of death correlated with neuropathic heredity and forms of mental disorder on admission. On examining the aggregate numbers it will be seen that deaths occur most frequently consequent upon mania and dementia. Deaths from melancholia and mania do not arise from exhaustion, except in rare instances. The deaths are, like the admissions, the results of somatic diseases, the diseases of the cerebro-spinal system naturally predominating. Therefore, from whatever point of view insanity is regarded, we return to the basal fact that it is somatic. The slight degradation of melancholia finds expression in twenty-nine cases, whereas mania is represented by seventy-three cases. The enfeebled class, of course, represents the accumulated wreckage, and includes many different conditions, from idiocy to senility.

The number of deaths after first admission is 140 : males 86, females 54, the percentages being 17·30, 20·52, 13·84 for these respectively. This, again, establishes the fact that insanity in men is much more fatal than in women, and is distinctly traceable to conditions previously referred to—alcoholism, paralyses, and organic diseases which preponderate in the male sex. Of course this Table does not show the complete mortality from general paralysis, nor, indeed, any of the somatic diseases, because many patients were removed unrecovered. It is merely a record of fatal results in reference to certain accidentally selected cases. Table XV mainly illustrates the heavy mortality in the earlier months of insanity, and I do not analyse the details.

To resume, 809 persons were admitted, 252 recovered, 315 were removed unrecovered, and 140 died, leaving 102 resident. The percentages are: recovered 31·14, unrecovered 38·93, died 17·30, remaining 12·60—slightly differing from the returns of Table I for admissions and re-admissions. The expectation for this class of patients therefore would be : of every 10 patients received 3 will recover, 4 will leave unrecovered, 2 will die during residence, and 1 will remain indefinitely resident. But it is to be noted that of the 3 discharged recovered it is probable that not more than 2 will remain permanently sane. This practically agrees with Dr. Thurnam's finding in a



similar institution half a century ago: "Not more than two remain well during the rest of their lives." It is a gloomy prognosis, verified too long and too surely. I hope and trust that the future will mend it.

### LECTURE III. SOMATIC CORRELATIONS AND RÉSUMÉ.

Having reviewed the clinical experience of twenty-five years from a statistical point of view, I shall now proceed to consider certain correlations between somatic and mental phenomena.

There is no doubt just at present some disparagement of psychology in these studies, and a sceptical attitude towards the assumed occurrence of a mental disorder without an operative physical cause, yet I cannot range myself with the opponents of psychology. For instance, by his researches into the phenomena of fatigue Kraepelin has explained what was formerly obscure, and improved the methods of education throughout Germany. Mental fatigue and bodily fatigue exercise the same effects upon the brain, and it is a mistake to suppose that by altering the kind of fatigue reparative processes will be encouraged thereby. Italian observers have demonstrated the toxic nature of fatigue in the lower animals, and we can precisely understand the process.

I have reported from time to time cases of communicated insanity—*folie à deux*, and have inquired into cases reported in the newspapers as they occurred. The circumstances are somewhat difficult to unravel because of the prepossessions of those who relate them, and it would appear that these incidents are more common in France and Ireland than with us. Is it possible to *infect*, so to speak, a person with insanity by immaterial communications?

OBSERVATION 2607.—Two sisters arrived at the asylum one afternoon, the younger being in possession of the usual legal papers for the detention of the elder. They both presented the same pronounced delusions of persecution, both had experienced the same mysterious influences, and both had seen the same visions. They declared that commands were issued to them simultaneously, and they had to obey simultaneously. It became evident that this account of their troubles would not stand rigid scrutiny. The elder sister, who had been successful in business, dominated the younger, and was the active partner, the suggestor of every morbid idea. She had performed the

part of a Joanna Southcote, and her sister, her only disciple, explained the failure of intention as the direct result of Satanic interference. It also became evident that the elder sister's insanity had been of considerable duration before the younger sister joined her in lodgings; and, indeed, she remains an ordinary case of chronic delusional insanity. The younger sister, after the separation, improved somewhat at home, but was eventually sent to another asylum, where she partially recovered and was accordingly discharged. As usual, any hereditary disease was denied, and, as usual, the hereditary defect was ascertained. *I do not believe that any case of this kind could be traced to a family other than neuropathic.* In this particular instance the occurrence of two cases of insanity in the family was only what might have been predicted. It was not by any means simultaneous in inception, or development, or symptomatic phenomena; and I believe that the younger sister would have become insane had the elder remained in her foreign home. She was neuropathic, she lived immersed in morbid influences, and in such a manner as to encourage disaster.

A successful showman said the other day that the public like to be gulled, and I have no doubt that his appreciation of that psychological fact assured his success. Far-fetched and mysterious explanations of vital phenomena are assuredly popular, and there is a constant ineffective endeavour on the part of insane friends of insane patients to explain away the occurrence of insanity by the principles of Heinroth, by the dispensations of Providence, by the occult influence of hypnotism.

OBSERVATION 2522.—A clerk, æt. 27, had been leading an eccentric, irregular life, and was admitted with the information that he had been insane for a month in consequence of his having been hypnotised by a friend. It was evident that his malady had been of much longer duration, and of insidious development. He laboured under fixed delusions of persecution, was most indolent and untidy. He had no initiative or consideration for others, and his future was of no interest to him. He was removed in that condition and so remains. The family are neuropathic, and it could not be impressed upon them that the hypnotic experiment was a mere incident in a degenerative disease.

These cases need not be multiplied; indeed, it is with some diffidence that I have referred to them at all. Vulgar errors are of an incorrigible nature, however, and they are so constantly intruded on medical attention that they insist on some recognition. Esoteric Buddhists, or Christian Scientists, or some such perverts are always with us—not always under care.

The age and health of the parents at the time of conception of offspring are of importance in the evolution of the race. I

have recorded several instances of paternal drunkenness in this connection, but the mere accident of one act of drunkenness is relatively unimportant compared with the habitual condition of the persons noted. Nor have I been able to discover any definite relation between the use of midwifery forceps and the individuals who have come under my care.

What is of real importance in the study of neuropathic children is the immediate ancestry, the environment and the education which condition them. Dr. Clouston has so lately studied the psychoses of development that I need not enter into this important branch of our subject. Dr. Dewey, of Chicago, has also investigated the early life conditions in 200 sane and 200 insane persons. This comparative method elicits a series of facts which tend to confirm the observations which I have submitted. Briefly, whatever tended to eugenics found expression in the sane in a higher degree than in the insane. For instance, excessive use of alcohol, of tobacco, of tea, of coffee appears more frequently in the insane families; tuberculosis, insanity, malarial environment follow the same rule. Neglect and poverty, lack of home discipline, defective schooling were all more apparent among the insane. In short, a neuropathic heredity was continued in a neuropathic environment, and issued in a neuropathic generation.

The evolution of character, ability, temperament, and success has not been studied with that care which the subject demands. It is not sufficient to write around the great names. We know that the race tends to average abilities, with some slight advantage to the families of exceptionally able, *well-balanced*, intellectual parents. It is the kind of mistake to which I have already referred that exclusively considers the exceptional, the bizarre, and the extremes. For the determination of the probabilities of inheritance of any character, physical or mental, within normal limits, or the possibilities of disease, a study of the general population is absolutely necessary. The successes *and* the failures must be considered in detail. Professor Karl Pearson has found that the intensity of correlation between "want of mental balance" in parents and insanity in children is from 0.25 to 0.30, probably the same as exists in regard to other characters—*e.g.*, stature, colour of eyes, and so on—thus showing, as might be expected, that somatic conditions are paramount in the first instance; how-

ever, environment may possibly influence the organism in its growth and development. I plead that Professor Karl Pearson will have the support of the College in his endeavour to collect sufficient data for the further elucidation of this question, in the firm belief that the results will lead to a better understanding of the national requirements towards the attainment of health and efficiency.

A study of the influence of marriage, widowhood, and divorce as affecting the development of insanity is so complicated by individual circumstances that any generalisation is almost impossible. I have had little experience relative to divorced persons, and the social conditions of widowhood vary so greatly that there is no possibility of generalising upon them. Unsuitable and unhappy marriages are unfortunately only too common, and I have so seldom known a proposed marriage broken off on the grounds of insanity that there seems to be no immediate hope of relief in that direction. On the contrary, one neuropath seems to have an elective affinity for another neuropath. Probably in matrimony the average practical man looks for the average practical woman; for the fainting fits and genteel spasms of eighteenth century young ladyhood are now quite out of fashion, and athletics reign supreme.

No doubt the daily round, the common task, are irksome to the nervous and decadent.

OBSERVATION V 86—A married woman with an adolescent family was admitted in a taciturn, apathetic condition. Her home life had for long been burdensome, although the causes are not obvious to others. From time to time she breaks out in violent paroxysms of rage, and expresses the most unjustifiable suspicions of her husband and other members of the family. From time to time she disappears, and once got so far as to engage herself as a domestic servant. She suffers from planomania—an inveterate recurrent impulse to wander. This has been studied under the descriptive title of *vagabondage* and no doubt constitutes the foundation of the myth of the Wandering Jew. The disorder is common enough, whether one regards it as an ancestral regression or a defect of yesterday. All the cases known to me have been deeply neuropathic; and I can only regard the fact of marriage in this instance as purely accidental, and irrelevant to the real issues.

I have already referred to meteorological considerations and my difficulty in placing before you any coherent account of my observations. I might add here that we had a good opportunity of studying the influence of the moon, which, when full, formerly



so excited the Tom-all-alones of a former age, and which, in nomenclature, will remain with us while Acts of Parliament and official documents so carefully conserve the tradition. In my seafaring days sailors were full of superstitions more or less unaccountable. One particularly in evidence was the baleful influence of the moon—the superlative danger of sleeping on deck in moonshine unless under the shadow of the sails. I suppose that those old tales are already forgotten, like the sailors' chanties, for nothing suits the mariner now but the latest ditty of the music-hall.

Certainly noise and excitement were at their maximum in Murray's Asylum on bright moonlight nights for many years. That was matter of common knowledge, which we reduced to written records. The rooms for disturbed patients were lighted from the south-east and shutters had not been fitted to the windows. When that omission was remedied the change was at once apparent, and the influence of the moon was finally abolished.

As sleeplessness is the most invariable prodromal symptom of insanity, so it is of the greatest importance in the course of the malady, whether from the view of treatment or prognosis. The high pressure of the blood interfering with repose and nutrition is the chief disturbing factor. The whole endeavour of treatment must be bent towards the restoration of sleep, not so much by the crude effects of narcotics as by the wider application of medical skill. It is not my purpose to touch upon treatment or nursing, nor is it necessary to insist on the importance of this point. The management of the insane at night is quite as important as their management by day, and their conduct at night is just as indicative of their future as their conduct by day. The return of sleep is a sign of recovery or failure to recover—a good sign if improvement is concurrent in other directions, a bad sign relatively if there is no, or but partial concurrence. For insomnia is not a symptom of chronic insanity. Dr. Whitcombe forcibly directed my attention to this fact many years ago. An alarm of fire occurred in a large dormitory at night-time in the Birmingham Asylum. The fire brigade entered and retired, but not a single patient moved from her bed; most slept through the incident. Excepting a few cases of chronic mania, a few of circular insanity in the excited phase, and especially of that class in which hallu-

cinations are prominent, or the cœnæsthesia is greatly perverted, the old standing cases sleep soundly and are aroused with difficulty. This restoration of sleep bears a close resemblance to the increase of body-weight; if the nutritive processes become active and there is a concurrence of other favourable signs the outlook is hopeful; but degeneration may go hand in hand with an unhealthy pallor, and an undesirable, flabby corpulency accompanying permanent enfeeblement of mind.

It is this morbid somnolence which permits of the frequent and necessary attention of nurses to the chronic insane. One must clearly discern the values of all the symptoms existing before coming to a conclusion that the cessation of insomnia is of good omen.

When the nightly duration of sleep is charted it is usual to find a cyclic variation, in conformity with observations in other directions. The sleep may be sufficient on alternate nights, or the cycle may extend to seven or more nights. Usually it is variable and dependent upon the somatic changes.

OBSERVATION 2627.—Melancholia, female, æt. 40. At first for about a week varied on alternate nights between no sleep and eight or nine hours of sleep. Thereafter slept well for four or five nights, with one bad night intervening, while, at the end of six weeks, sleep was re-established concurrently with marked mental improvement, which ended in an excellent recovery.

OBSERVATION 2623.—Adolescent mania, female, æt. 21. At first, for about three weeks, a tendency to alternate nights of three hours and seven hours; later, smaller irregular variations between six and eight hours. In the second and third months of residence there was a tendency to stupor, marked by taciturnity. Thereafter it was unnecessary to record her sleep and she was discharged recovered in three months. This patient was phthisical before admission, and gained nearly three stones in weight in the course of treatment.

OBSERVATION 2575.—Acute delirious mania, female, æt. 35. The posthumous daughter of a paralytic father, admitted on the eighth day of her malady. First night no sleep, second night one hour, third night two hours, fourth night one hour, fifth, sixth, and seventh nights no sleep, eighth and ninth nights somnolence followed by death. No skilled observer could have mistaken the somnolence of the two nights preceding death as an interval of reparative processes.

OBSERVATION 2559.—Recent melancholia consequent upon sepsis, pyelitis, cystitis, and renal calculus. Admitted in a very prostrate condition. A surgical consultation resulted in the opinion that the malady was cancerous. Sleep good and bad almost certainly on alternate nights until death after a residence of four months.

OBSERVATION 2412.—Circular insanity, observations during maniacal phase, æt. 77, January, 1905. For a week little or no sleep, then about a week of six hours nightly sleep, thereafter about a week of sleeplessness, and so on. In October, November, and December of the same year he had on an average three hours of sleep at night and none by day. But in these cases of circular insanity it is a constant surprise to observe how tireless they are, how little sleep they get, how little apparent damage is done to the brain, and, above all, how very seldom they die during the phase of excitement. A sudden onset, a period of mischievous reasoning mania, sleeplessness, without apparent mental deterioration in the sphere of memory, inevitably betrays a neuropathic heredity, and an incurable alternating insanity which may persist into a comparatively long life.

OBSERVATION 2636.—Recent excited melancholia, female, æt. 48. After admission for many weeks slept alternately not at all or little. When sleep did at length return it was liable to occasional failure for many weeks, and when it was at last re-established there was no appreciable improvement in the mental condition. She has fallen into an incurable condition of chronic melancholia. I say incurable because she shows marked somatic stigmata. She belongs to an intensely neuropathic family and her bodily condition is depraved. With a height of 4 ft. 10 in. her weight has not appreciably varied from 6 st. 3 lb. Were there no somatic stigmata, were her ancestry a healthier stock, had her malady been limited to one attack, the case might not have been so hopeless, for delayed recovery occurs from time to time, especially in the class of female melancholiacs. It is not the querulent mental condition but the somatic conditions which are fundamental.

OBSERVATION 2604.—Melancholia recent and delusional, female, æt. 38. Persistent sleeplessness on admission after three months of depression. With certain remissions sleep was re-established, but an incorrigible premature menopause resisted all treatment. During a residence of two years she increased in body weight, but the delusions were fixed and unvarying, and the somatic processes were defective; she suffered from œdema pedum and a similar condition in the face. Notwithstanding her unsatisfactory condition her body weight increased by four stone during the period of her residence. She was removed unrecovered, menstruated soon afterwards for the first time for several years, and found means to commit suicide some four months later.

When the somatic failure is general it is evident to the most casual observer. The chronic degraded patients of one asylum closely resemble those of their class in any other asylum. The physiognomy of insane persons used to find occasion for remark in the formal legal certificates almost as a matter of course, and perhaps it is a sign of more accurate scientific knowledge that these observations are less frequent in the practice of

to-day. I do not know that it is a gain. Dr. Lionel Weatherly told me that when he went home from college to his father's practice he had occasion to see a patient suffering from pneumonia. He returned with his diagnosis, and, to the best of his ability, described the symptoms as revealed by the stethoscope. His prelection was very ill-received, and he had to go back in order to bring his father a full, true, particular account of the patient entirely apart from the precise stethoscopic condition of the lungs.

We cannot neglect the facial appearance of the patient in discussing the question of prognosis. It is characteristic of degradation, if degradation has declared itself. Apart from the emotional expression of the prevailing mental tone there is an immobile, listless, preoccupied appearance which augurs badly for the future. The nervous system is out of gear, and the enfeebled muscles indicate that failure. The complexion is pallid and the skin shares in the general inefficiency. The eyes are relaxed and their mobility is restricted. Pigmentation of the skin is of evil omen, and if it is systematically picked by the patient one can hardly look for recovery. I could cite one or two cases to the opposite effect, but they are very rare and present other counterbalancing symptoms.

The morbid condition of the skin in insanity has not been sufficiently investigated as yet. The development of nervous system and skin from the point of view of embryology may in some measure elucidate these complications. In any case, the extremes of harsh dryness in certain forms of melancholia and copious perspirations in certain forms of mania are commonly recognised. Also the greasy, offensive appearance in degraded cases. Perhaps the most important cutaneous symptom from the point of view of prognosis is the pigmentation which so frequently occurs, and which must be considered as indicative of a progressive and intractable disorder when it is unmistakable and long continued.

The appendages of the skin are also affected. The state of the hair is a valuable index to the general condition. This was most marked in a case of alternating insanity, in which the strong black hair stood absolutely on end during the excited period. Sir Arthur Mitchell expressed a doubt if this were possible without the manual interference of the patient, who was therefore closely and continuously watched for a consider-



able period. It proved to be a true somatic condition. The patient so affected long suffered from phthisis, and as her bodily strength diminished the stark condition of her hair became much less marked. There are other records of affections of the nails, and notes of desquamation which I need not discuss at length.

A persistent high temperature is a warning of evil import, as regards recovery, and even as regards life. The high temperatures of insanity, apart from complications, are, of course, usually very moderate compared with other diseases. I have already alluded to this in speaking of observations made possible by the clinical thermometer.

The general nutrition, perhaps, is the most certain index of the progress of a case, as has been well brought out by the study of body-weight in recoveries and removals. In asylum life the periodical and exact weighing of patients is a routine practice generally adopted, and generally trusted to indicate the variations in somatic conditions which are so important in the adoption of remedial measures suitable for each particular case; also as indicative of the earliest warnings of complications such as tuberculosis. A restoration of lost body-weight, like a restoration of diminished secretions, is almost invariably one of the first signs of returning health.

The muscular system presents very many problems of interest, apart from the pareses and paralyses of pathological insanity. The fumbling fingers of a general paralytic fail in muscular energy, in co-ordination, and in the guiding direction of the higher cortical centres. In lesser degree the finer adjustments of intention and action are discernible in ordinary insanity, and as the degradation deepens so the inability becomes declared. The somatic failure is then positive. Instruments of precision are applied with difficulty in the elucidation of these conditions. The common failure in attention renders it impossible to record reaction time, or the appreciation of weight, without making large allowance for error. Again, the motor reflexes, even in cases of advanced dementia, are sometimes, and exceptionally, very brisk. But as a general rule it may be stated that the deeper the mental degradation the more obvious are the reflex defects, whether motor or mental. All cases displaying rhythmic, monotonous movements are to be regarded as most seriously damaged. In some cases these movements, apart from idiocy,

have a gross pathological basis. I recall an extreme case of cerebral atrophy, especially of the frontal lobes.

The morbid condition of bones in the insane has long been recognised, and I believe that the anæmic failure of the chronic insane is part and parcel of the osseous defect. I shall not venture to discuss questions of craniology, in reference to which palatal deformities are of importance in determining a neuropathic heredity in many cases where information is given reluctantly. A few words may be permitted in reference to oral sepsis and a common symptom of general paralysis—a persistent grinding of the teeth.

Dr. Rayner's work in the out-patient department of St. Thomas's Hospital has been amongst the insane, and especially amongst incipient cases; and his conclusion is that one of his most important duties has been to hand over these persons to the care of the dental surgeon. The improvement in mental condition after his attentions are completed has been so remarkable that Van der Kolk might have added another sympathetic insanity to his list. I need not load this aspect of the subject with clinical details. The importance of oral sepsis as a cause of widespread mischief is now generally accepted. I have noticed, too, that recurrent insanity, or exacerbations of insanity, are often ushered in by attacks of toothache or facial neuralgia, and think it of sufficient interest to mention this fact, which may be regarded as a danger signal.

The gait of insane patients is characteristic; the bent, stiff neck, the downcast eyes, the untidy dress, the careless slouching walk are all in various degrees indicative of somatic and mental degradation. Extraordinary attitudes impress one unfavourably. Often these are assumed by adolescents who may recover, but my experience is that they are symptomatic of relapse sooner or later.

Alterations in handwriting, and tricks of voice or speech indicate the interaction of mind and body in many important directions. Vain and purposeless repetitions of phrases in the letters of a person not appreciably insane are often evidence of chronic alcoholism, and specially, I believe, of cocaineism. In the case of a person tending towards chronic insanity such repetitions are a mark of incurability. The corresponding phrase of speech is not less ominous; still, there is a lower grade—*echolalia*, in which there is a repetition of words heard

by the patient and immediately reproduced; and lower still in the scale is *verbigeration*, in which new words are invented.

OBSERVATION 1884.—Student of medicine, æt. 27. Family neuropathic. Convulsive fits in infancy. A sensitive, studious, and solitary young man, developed grandiose delusions, wrote verses and sent them to Matthew Arnold and Ruskin. They were quite ineffective in thought and construction. He then became convinced that he was poisoned, and began to invent words, most of which showed a vein of persecutory ideas—*c. g.* :

“Bothered with toothache,  
Tooth with a bore;  
Doctor should *jankler* take  
Or no cure.

“*Ding* about talking,  
No *thraffle-up*;  
Take *goak* of walking,  
*Joksutty* and sup.”

This perversion of intellect is, of course, quite different from the confusion of mania where rhymes are commonly strung together in an incoherent succession, yet connected by some associations of sound or sense. It is, so far as I am aware, the outcome of a brain incurably perverted, and calls to mind the thesis of that interesting old book—*Wigan on the Duality of Mind*.

Long periods of absolute taciturnity may result in recovery, confusion may very readily disappear, but the occurrence of verbigeration is a symptom of degeneration not less ominous than persistent amnesia.

Stuporose states often mark the swing of the pendulum from high excitement to temporary exhaustion, and it is often very difficult to distinguish between curable and terminal dementia.

OBSERVATION 2188.—Lady, æt. 25, admitted in a condition of acute mania. Family neuropathic. A discharge from right middle-ear disease had ceased on the inception of the mental disorder. Erythromelalgia had been observed, and the usual somatic concomitants were recorded. The malady was prolonged and threatening to end in chronic insanity. A stuporose condition varied with subacute transient excitement—a complex which I regard as ominous. Under a course of thyroid treatment she made a good recovery, and throughout the years which have passed it continues necessary for her welfare to take one or two thyroid tablets weekly. A prominent feature in this case was the occurrence of drenching perspirations which Millingen long ago regarded as indicative of failure. I must refer to Dr. L. C. Bruce's clinical studies for the modern explanation of this complication, and its place in the evidence for toxic invasion.

To resume, then, these various conditions of the organism betray, each in its own relations, the generalised nature of insanity, the generalised defect and disorder in which the mental symptoms originate, and upon which they depend. Within the compass of these brief lectures it is impossible to discuss all the somatic conditions. I rather endeavour to indicate the trend of experience, and prefer to reserve the consideration of highly specialised subjects of importance, such as the work of Flechsig relative to the association fibres of the brain demands.

I now, therefore, submit Table XVI, which represents an attempt to correlate somatic disorders with the mental phenomena of insanity. It is generally recognised that prognosis will vary with the incidence of these disorders and diseases. If bodily health can be re-established there is hope of mental improvement and recovery. For instance, if there is no possibility of restoring a damaged cardio-vascular system the outlook is gloomy. Prognosis, therefore, must await the determination of these events. However, a case may be desperate yet recoverable:

OBSERVATION 2353.—Female, æt. 46. Admitted in a condition of excited melancholia. The mitral valve was seriously damaged, the heart was dilated and hypertrophied. The state of the pulse was most alarming. She had been seen repeatedly by Dr. George Balfour, who had found that her heart was always susceptible of improvement by large doses of digitalis. He saw her in the Perth Royal Asylum when greatly exhausted by continuous excitement, and was satisfied that the treatment formerly successful would be successful again. In three months she was discharged improved, and completed her convalescence at home.

The following interesting case of myxœdema might be cited as definitely toxic:

OBSERVATION 2553.—Female, æt. 31. Admitted in a condition of acute mania. Family neuropathic. She had long been neurotic and myxœdematous. Under thyroid treatment she generally improved. She went abroad to escape the cold of winter in this country, and unfortunately took a large quantity of thyroid tabloids with her and consumed them recklessly. It was impossible to determine the exact amount, but she had suffered so greatly and had so much benefit by the treatment that she went to great extremes. After admission and a complete cessation of the drug during the acute symptoms it was resumed in small doses, and convalescence appeared to be established. Dr. L. C. Bruce kindly examined her blood in this phase, and found leucocytes



13,424 per c.mm. as compared with 14,027 on a previous occasion. Polymorphonuclears 56 *per cent.*, lymphocytes 28 *per cent.*, eosinophiles 4 *per cent.* Blood plaques increased. He thereupon gave a good prognosis, which was fully justified within a short time.

Referring to Table XVI it will be observed that it deals with sensory disorders, appetites, instincts, disorders of emotion and delusions. In its original state these were extended to affections of memory, reason, etc., but the entries were so numerous under perversions of intellect and conduct that they practically included every case, and no further deductions could be drawn from them. Insanity is in essence from the psychological side an affection of intellect made manifest in conduct, and I therefore present the table with these deducted.

Of course those with somatic stigmata generally tend to marked mental degeneration.

It is necessary to read for hæmopoietic disorders, *anæmia*. The important variations of the blood, discoverable by modern methods can, of course, find no place in old records. In the cardio-vascular group it is interesting to note the depression and fears which are exaggerations of the usual features of these maladies. Gastro-intestinal cases are similarly affected. The great excess of the female sex under the heading of generative disorders is in accordance with general experience. I have not been able to corroborate certain American observations which record extraordinary voluminous morbid details in the sphere of gynæcology. There can be no doubt that the urine and vaginal discharges of the insane are highly toxic, but the vast array of surgical necessities alluded to is not within my experience, either by the bedside or in the *post-mortem* room.

The common concomitant of generative disorder is the irregularity or suppression of the catamenia. It is usually said that menstrual periods are accompanied by exacerbations of insanity. That is by no means the rule according to my observations. No doubt the return of catamenia is a favourable indication, and we have had several such cases after the exhibition of ergoapiol where other drugs had failed. I might also record a case of recovery in which the catamenia continued suppressed, and were restored by the introduction of a stem pessary at home. Quite exceptionally I have had good results from the use of ovarian extract after ovariectomy, but can

present no case under asylum treatment in which that preparation altered the mental condition.

It is our routine practice to record daily on calendars the excitement or depression noticeable in individual patients. These calendars also show the days of menstruation. I have condensed these observations for years together, and on examination of the results find that it is quite exceptional to correlate the catamenia with the exacerbations of insanity; occasionally this is discovered in mania, but never in melancholia, so far as my observations go.

What is of much more importance are the toxic conditions of these tracts, whether puerperal or not.

OBSERVATION 2697.—Male, æt. 57. Family neuropathic. Admitted in a state of alcoholic dementia, with delusions of identity and hallucinations of hearing. He had lost all sense of time and space. Apparent total amnesia. Urine purulent and highly ammoniacal. His physical condition was greatly deteriorated. Under a course of helmitol the urine cleared and his mental state improved. He made an excellent recovery and returned home. I am informed that he has not resumed his habit of alcoholism; but the pathological state of the urine became again evident. He was naturally anxious as to this disconcerting experience, and helmitol was again administered; the urine cleared up and he continues in better health than he has known for years.

Dr. MacHardy (*British Medical Journal*, 1905) has recorded two cases of general paralysis improved, if not recovered, by the use of urotropine; unfortunately we have had no such result in these extreme circumstances.

One point in regard to these generative disorders and their correlation with the sense of smell is remarkable. It is generally stated that the connection is obvious and common. I have not found it so; in spite of a special examination of all the cases I have not discovered any record in corroboration of that statement, and can only conclude that it is not so obvious as has been asseverated, or that we have overlooked a series of facts.

Another general statement relates to the probability of recovery after the patient has had a crop of boils. That is quite opposed to my experience. The microbic infection of boils does not seem to me to have acted as an *alterative*, far less has it exercised a beneficial effect physically or mentally. The question of alteratives is of special importance in medicine, general and therapeutical. It offers an interesting opportunity of discussing unconscious memory in relation to insanity, in the

light of the suggestive and philosophical work of Dr. Charles Creighton. I leave it with reluctance, and do not purpose entering on any psychological analysis of the cases reviewed. My aim has rather been to direct attention to somatic disorders and to correlate these with insanity under the two broad divisions—ordinary and pathological. Yet it is necessary to say something in general terms. For instance, the primary fact of consciousness has a relation to prognosis; if it is lost for any considerable space of time it is a measure of mental degradation indicating incorrigible defect. Mere confusion is not at all a hopeless condition, but delirium is of the gravest import. I have not found that perversions of identity are so incurable as was formerly supposed; but as a general rule it may be stated that perversions relative to self are much less intractable than those relative to others. Did time permit these opinions could be supported by clinical illustrations; but I must pass to the sphere of sensation. The general *cœnasthenia* is of importance in this connection. It is a common measure of convalescence to observe carefully the mental attitude relative to fatigue. A loss of the sense of fatigue, an abolition of sensation in regard to fatigue, denotes an uninterrupted course of mental disorder; on the contrary, when the patient begins to complain of fatigue and pain and discomfort the complaint is welcomed as the first sign of improvement.

The sensations colour the delusions, and in that respect the study of Table XVI is interesting. The genesis of delusions from the painful sensations of gastro-intestinal disease is readily understood: it is easy to pass from the feelings of gastritis to the feelings of poisoning. In fact, I would venture on the generalisation that perverted sensations determine the tone of the delusions, and the general mental condition. It is unthinkable that the depressing nature of abdominal disease, altogether apart from insanity, should issue in grandiose ideas or pleasurable excitement.

It would seem that hallucinations can be an affair of auto-suggestion in some cases.

OBSERVATION 2514.—Female, æt. 38. Family neuropathic. Admitted in a state of chronic alcoholism with mania. She professed to have the power of calling up pictures in the fashion of a cinematograph. Waving her hands in front of the wall of her room she asked for a subject, and, failing a suggestion, preceeded to describe moving pictures with great emotional display. This is plainly fantastic rather than imagina-

tive. She soon recovered, and stated that she had quite forgotten these incidents.

And, further, it is uncertain how far such delusions will be carried :

OBSERVATION 2164.—Female, æt. 34. Family neuropathic. Admitted in a condition of delusional insanity with fibroid phthisis. She complained of persecution and bodily torments ; said that her thoughts fell from her nose and tinkled on the floor, and that I could hear them by attentively listening. I called the nurse to sweep up the litter of thoughts so falling and so tinkling. She was most indignant, on the ground that no one could sweep up thoughts.

As I have already indicated the former case, having been alcoholic, is of no importance in prognosis, but the latter case, owing to the somatic condition and the deep perversions, could only prove incurable.

The emotional states, of course, vary in every conceivable direction ; perversion and degradation are only too often recorded. It is always a favourable sign when a patient returns to natural ties, when natural affections resume their sway.

The measure of degradation may be ascertained by observation of the power of attention and memory ; yet these may be acute and the condition of the patient may be hopeless as regards recovery. It is commonly supposed that an unimpaired memory is an indication of sanity, yet the idiot savant may have a memory of extraordinary tenacity. The perversion of intellect may be complete, and both attention and memory perfectly unimpaired. I have, at present, two patients who are old-standing cases of delusional insanity—persecuted persecutors. They generally live in one of our detached houses. During the temporary absence of one the other gravely asked me if I would hasten his return, for her enemies were very hard upon her, and if he came back it would distract their unwelcome attentions from her. If the degradation is not wide it may still cut very deep.

In point of time we have already seen that recent cases are most favourable in expectation of recovery, and that cyclic variations are common. Also that a sudden onset and a sudden recovery almost inevitably mean neuropathic inheritance, and recurrence sooner or later. A settled periodicity is bad, yet if there are no remissions tending to recovery the outlook is not less gloomy. The best sign in this respect is intervals of



remission, daily becoming of longer duration, and it is specially gratifying when self-knowledge returns, interest in surroundings is displayed, neatness of dress is studied—in fact, when there is an indication of an appreciation of the amenities of existence, when the prayer of the Kilbarchan weaver is answered—in moderation.

And so we inevitably come back to the initial stage of this discussion—the importance of somatic conditions in relation to the mental states. Prognosis in insanity must proceed upon a wide and careful review of the whole circumstances affecting the individual, who is in a degenerative condition physically, and therefore mentally. All that goes to make up that degenerative condition must be separately investigated and summed up. The elements of prognosis are analytical *and* synthetical, and it is determined by the nature of the degree of the involvement of the organism in the widest sense. If all the functions are involved, if the degenerative process is universal and intractable, the future of the individual is desperate indeed ; if the defect is partial and amenable to treatment, naturally the case is more hopeful as these limitations of involvement decrease.

In that sense how hopeless is the case of pernicious anæmia, in which the mental manifestations are the direct result of an impoverished brain ! For a time it may be possible to draw upon the reserve of red blood-corpuscles, but the stock is not inexhaustible.

It is in consonance with these observations that the toxic theory of insanity demands our most serious attention and excites our liveliest hopes.

Prognosis can never be an affair of aphorisms ; these *obiter dicta* require to be fitted into the general scheme of things ; they are altogether too facile and too partial for our purposes.

I shall not stand suspect of neglecting the therapeutical and general treatment of insanity in having discoursed at length upon data and deductions. The therapeutical position is being slowly won by the steady advance of our science and art.

We have, perhaps, carried architectural planning, training of nurses, farming and gardening as far as it is desirable, for there is a general consensus of opinion that this country holds an honourable place among the nations in these matters. When Mr. Holloway was moved to erect a hospital for the insane of the poorer middle-class, in the course of his inquiries he asked

Dr. Yellowlees if asylum entertainments were undertaken in the interests of the patients, or merely in order to find notice in the local newspapers. That was a shrewd question by an expert in the gentle art of advertising. It was answered to his satisfaction by a practical demonstration, followed by no public references.

I hold it desirable that a physician should know the baths and wells of Europe, and that he similarly should know the hospitals of the country before he distributes his patients amongst them. There has been some foolish talk about the *Hanwell Wall*, and the segregation of the insane—as if the insane became insane in asylums. I know no hospital for the insane where our colleagues are unwelcome in their most intimate medical concerns; and the burden of these lectures is the burden that is laid upon our honourable profession, not to be borne by asylum physicians alone but shared by every worker, in every contributory detail. The problem does not, unfortunately, concern the mass of chronic and incurable insanity, it is relative to the inception of insanity—the early treatment of insanity as it is presented to the family doctor and none other. These metropolitan provincialisms want clarifying.

For anyone desirous of following out the individualised, mental and moral treatment of the insane, I know of no book so interesting as that of the late Dr. John S. Butler, of the Connecticut Retreat. It is a little book, a very little book, on a great subject, and it will keep his memory fragrant and green as a wise physician. It is rosemary for remembrance. And yet, Dr. Butler, occupied with this aspect of his work, insists again and again on the importance of the early somatic conditions of insanity, and the necessity of early and appropriate medical treatment.

Finally, on the general question of prognosis of insanity we have been counselled to give a guarded opinion, because it is the unexpected that happens. An eminent physician once said that he was paid for an opinion, not for a prophecy. But an opinion is truncated and ineffective if it be only relative to the moment of delivery. The questions demanded of us are urgent and necessary: Is the family business to be wound up? Are the pressing difficulties permanent or temporary? Is the home life to be altered for a time or for ever? Are careful plans for a career to be abandoned or postponed? I am impatient with

a science that executes a strategic retreat before such a battery of questions. In the last resort the kindly words of Horace recur to us :

“Tu ne quaesieris, scire nefas, quem mihi, quem tibi  
finem di dederint, Leuconoe, nec Babylonios  
temptaris numeros.”

Yet it is a poor account of scientific medicine if it is to be recorded of us that our premonitions are of no more value than a Chaldean horoscope.

It is an excellent practice, in which throughout the years I have followed Sir James Crichton-Browne, to sum up the probabilities in the Case-book on the reception of every patient. At least, it is a stimulating corrective for self-satisfied science ; at best, an incentive to the careful study of every circumstance affecting each patient. For it is only by that study, indefatigable and personal, that advance is possible to us or to our profession.

More steadfastly than ever our profession labours for the prevention of disease. That resolves in questions of eugenics, education in the widest sense, and a determined, informed study of all morbid phenomena.

(<sup>1</sup>) The Morison Lectures, delivered before the Royal Collège of Physicians Edinburgh, January, 1907.

## JAMES MURRAY'S ROYAL ASYLUM, PERTH.

TABLE I.—A General Statement of Admissions and Removals, regarding Admissions, Readmissions, and Totals; with Percentages during the Period under Review, 1880-1904 inclusive.

FIRST ADMISSIONS.				READMISSIONS.				TOTAL CASES UNDER CARE.			
M.	F.	L.	T.	M.	F.	T.	M.	F.	T.	M.	T.
Persons admitted for the First Time.				Readmitted.				Total Cases admitted.			
Recovered.	120	132	252	Recovered.	23	38	61	Recovered.	143	170	313
Of these	Unrecovered.	163	152	Of these	Unrecovered.	25	30	Of these	Unrecovered.	188	182
Died.	86	54	140	Died.	1	15	24	Died.	95	69	164
Remaining	50	52	102	Remaining	19	14	33	Remaining	69	66	135
Of the above—				Of the above—				Of the above—			
Percentage Recovered	28.63	33.84	31.14	Percentage Recovered	30.26	39.17	35.26	Percentage Recovered	23.80	34.90	31.87
Unrecovered	38.90	38.97	38.93	Unrecovered	32.89	30.92	31.79	Unrecovered	37.97	37.30	37.67
Died	20.52	13.84	17.30	Died	11.84	15.46	13.87	Died	19.19	14.16	16.70
Remaining	11.93	13.33	12.60	Remaining	25.00	14.43	19.07	Remaining	13.93	13.55	13.74

Percentage of Readmissions on Total Numbers admitted—Males, 15.35; Females, 19.91; Total, 17.61.



TABLE II.—*A Statement of Insane and Neuropathic Heredity recorded in reference to 809 Persons—  
1884-1904 inclusive.*

	Total Admitted.			No Heredity of Insanity.			Heredity of Insanity.			Heredity of Insanity, etc.			Percentage of Hereditary Insanity.			Percentage of Heredity of Insanity, etc.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Period I. ending 1884	99	100	199	53	56	114	41	44	85	59	59	118	41·41	44·00	42·71	59·59	59·00	59·29
Period II. „ 1894	139	130	269	77	75	152	62	55	117	101	83	184	44·60	42·30	43·49	72·66	63·84	68·40
Period III. „ 1904	181	160	341	102	73	175	79	87	166	145	134	279	43·64	51·37	48·68	80·11	83·75	81·81
Total	419	390	809	237	204	441	182	186	368	305	276	581	43·43	47·69	45·48	72·79	70·76	71·81



TABLE IV.—Chart of the Children of Parents Insane, Alcoholic or otherwise Neuropathic.

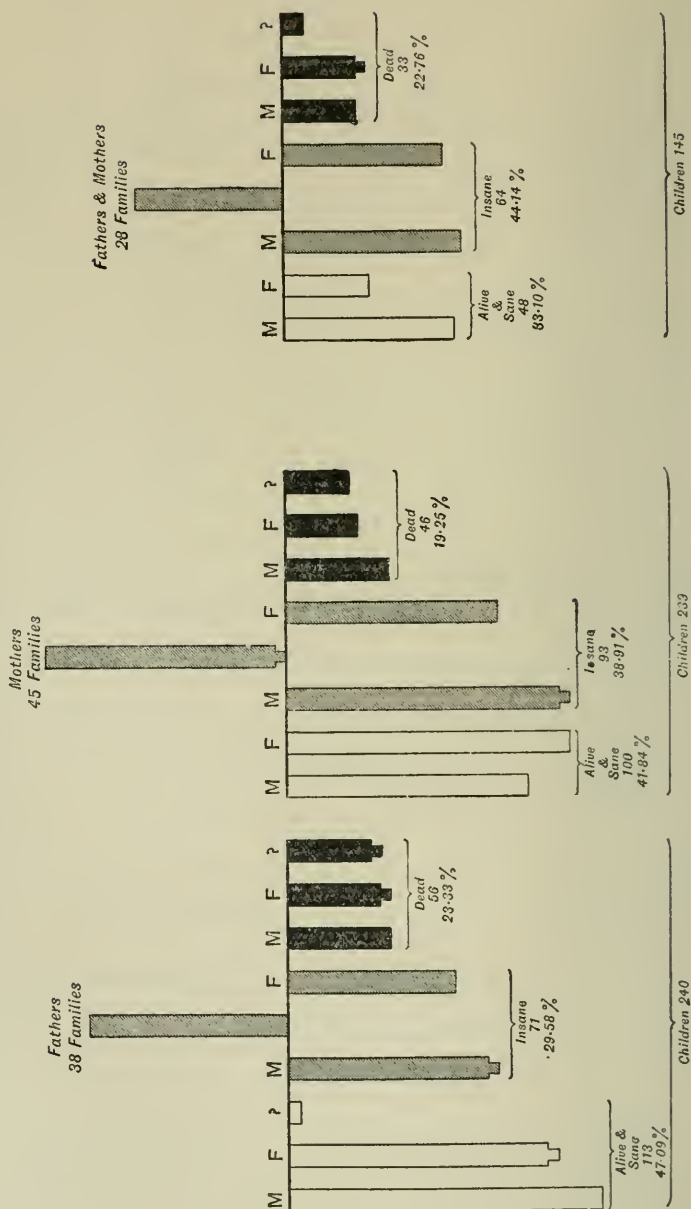


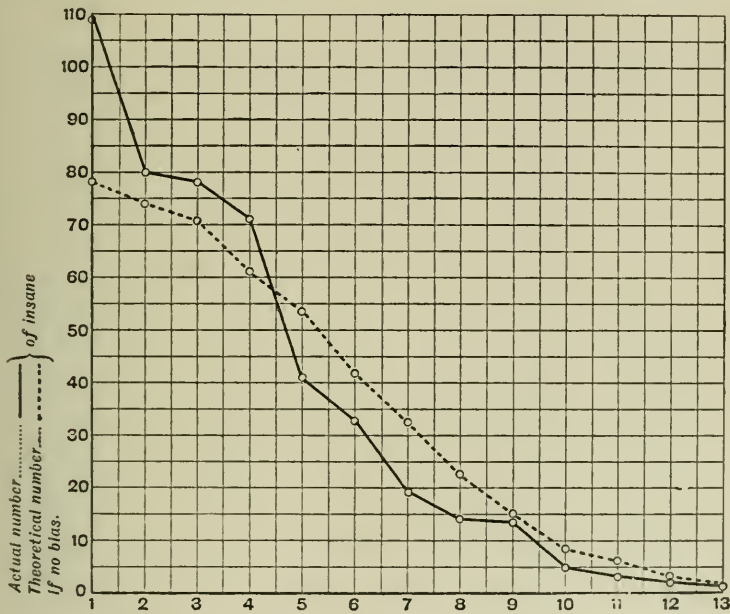
TABLE V.—*Chart of the Incidence of Insanity in Neuropathic Families.*



TABLE VA.—*Families containing at least one Insane Member.*

I. Frequency of size of Family.		II. No. of Persons born 1st, 2nd, etc.		III. No. of Persons born 1st, 2nd, etc., actually Insane.		IV. No. of Persons born, 1st, 2nd, etc., and Insane, if no bias.	
No. in Family.	Fre- quency.	Order.	Fre- quency.	Order.	Fre- quency.	Order.	Fre- quency.
1	10	1st	315	1st	108	1st	77·3
2	14	2nd	305	2nd	80	2nd	74·8
3	42	3rd	291	3rd	78	3rd	71·4
4	30	4th	249	4th	71	4th	61·1
5	48	5th	219	5th	41	5th	53·7
6	37	6th	171	6th	33	6th	41·9
7	41	7th	134	7th	19	7th	32·9
8	38	8th	93	8th	14	8th	22·8
9	20	9th	55	9th	13	9th	13·5
10	13	10th	35	10th	5	10th	8·6
11	8	11th	22	11th	3	11th	5·4
12	9	12th	14	12th	2	12th	3·4
13	5	13th	5	13th	1	13th	1·2
315		1903		468		468·0	

Family = Fraternity.

TABLE VI.—*Certified Patients. First Admissions. Table showing the number of Patients affected by Mental Disorders, correlated with general causal Factors and Age Periods—from inception to latest information, 1906.*

Mental Disorders.	Total Persons.		Deduct these Cases of—																		Net Total of Ordinary Insanity.															
			Alcoholism.						General Paralysis.				Epilepsy.				Organic.						Senile.		Trauma.				Idiots.				Being Persons.			
			M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.			M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.
Melancholia—Recent .	67	155	13	1	14	1	0	1	1	0	1	1	0	2	7	8	15	3	0	3	0	0	0	0	0	0	0	0	25	9	34	42	79	121		
Melancholia—Chronic .	48	62	110	5	3	8	0	0	0	1	0	1	1	1	2	5	7	1	1	2	0	0	0	0	0	0	0	9	10	19	39	52	91			
Mania—Recent .	89	74	163	24	5	29	12	0	12	5	1	6	1	1	2	10	6	2	0	2	0	0	0	0	0	0	43	13	56	46	61	107				
Mania—Chronic .	60	80	140	20	10	30	7	1	8	1	1	2	4	3	7	10	17	1	3	4	0	0	0	0	0	0	33	23	56	27	57	84				
Delusional Insanity .	53	43	96	8	0	8	0	0	0	3	1	4	1	0	1	3	0	3	4	0	4	0	0	0	0	0	15	1	16	38	42	80				
Dementia (including cir- cular insanity) .	91	40	131	19	6	25	19	0	19	0	0	9	2	0	6	6	12	9	2	11	0	0	0	0	0	48	12	60	43	28	71					
Totals .	468	387	795	89	25	114	39	1	40	19	4	23	11	5	16	35	35	70	20	6	26	0	0	0	0	173	68	241	235	319	554					
Idiots and Imbeciles .	11	3	14	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	14	3	14	0	0	0				
Grand Total .	419	390	809	90	25	115	39	1	40	20	4	24	11	5	16	35	35	70	20	6	26	11	3	14	184	71	255	235	319	554						







TABLE VII.—Conditions associated with *Insanity*, as ascertained on *First Admissions*—all forms included.  
*Asylum Statistics—Certified Patients.*

Persons Observed.	Total Incidence.			Total Neuro-pathic Heredity.		Heredity of Insanity.		Exhaustion (non-toxic).		Epilepsy		General Paralysis		Other Organic Diseases of the Brain.		Alcoholic.		Auto-toxic (Gout, Rheumatism, etc.)		Tubercle Syphilis.		Traumata.		Senile.	
	M.	F.	T.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total Neuropathic Heredity . . . . .	305	276	581	305	276	..	..	182	186	4	14	16	26	..	..	..	..	1	..	..	..	..	..	..	..
Heredity of Insanity . . . . .	182	186	368	..	..	182	186	4	14	16	26	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Exhaustion (not toxic) . . . . .	16	26	42	9	18	4	11	16	26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Epilepsy . . . . .	20	4	24	12	3	4	1	..	..	20	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..
General Paralysis . . . . .	39	1	40	31	1	10	..	..	2	1	..	39	1	..	..	..	..	..	..	..	..	..	..	..	..
Organic cerebral diseases . . . . .	11	5	16	7	4	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hemiplegic . . . . .	16	25	41	11	17	5	12	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cardio-vascular . . . . .	72	73	145	52	46	35	36	1	4	4	..	1	..	1	18	4	7	12	1	2	2	..	..	2	9
Respiratory (not Phthisis) . . . . .	4	12	16	3	11	2	8	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2
Gastro-intestinal . . . . .	34	61	95	24	46	18	26	..	3	..	..	2	..	1	..	6	..	2	7	1	3	1	..	..	1
Renal and vesical . . . . .	19	16	35	14	11	8	4	1	..	2	..	..	1	2	1	6	..	2	3	..	..	..	..	..	3
Generative . . . . .	8	82	90	6	60	2	45	..	5	1	1	..	..	..	1	1	1	5	1	1	1	..	..	..	2
Others . . . . .	29	30	59	17	21	10	12	1	..	1	1	1	1	..	..	4	3	2	..	..	1	..	..	..	2
Exotoxic—Alcohol, etc. . . . .	90	25	115	69	17	39	8	..	10	1	14	..	4	1	90	25	5	1	2	2	11	1	3	..	3
Autotoxic—Gout, etc. . . . .	38	55	93	24	37	16	25	..	1	2	..	3	..	..	5	1	38	55	1	1	..	..	1	..	9
Microbic Tubercle . . . . .	21	14	35	15	10	10	9	..	..	..	..	..	..	..	2	2	1	1	21	14	..	..	..	..	..
"    Syphilis . . . . .	33	1	34	23	..	15	..	..	..	2	..	23	..	..	11	1	..	..	..	33	1	..	..	..	..
Traumata . . . . .	20	6	26	12	3	10	..	..	1	3	..	1	..	1	..	3	..	1	..	..	..	..	20	6	1
Senile . . . . .	35	35	70	22	24	18	16	2	..	1	..	..	6	1	3	1	9	1	..	..	..	..	1	..	35

## URBAN.

Occupations and Dependents.	Total Persons.				Heredity.				Mental Disorder.				Final Results.							
					Neuropathic.				None.				Ordinary.				Pathological.			
	M.	F.	T.		M.	F.	T.		M.	F.	T.		M.	F.	T.		M.	F.	T.	
Government, Army, etc.	19	7	26		10	3	13		2	2	4		6	3	9		6	6	12	
Clerical	12	14	26		3	6	9		1	1	2		1	1	2		1	1	2	
Legal	19	4	23		13	2	15		6	3	9		4	2	6		4	2	6	
Medical	19	5	24		10	3	13		3	9	12		4	4	8		4	4	8	
Teaching	6	26	32		2	15	17		2	3	5		1	1	2		1	1	2	
Artistic and Literary	12	5	17		8	4	12		3	8	11		3	3	6		3	3	6	
Other Professions	11	4	15		4	4	8		8	7	15		1	1	2		1	1	2	
Domestic Service	41	41	82		8	8	16		15	15	30		1	1	2		1	1	2	
Commercial	138	47	185		69	26	95		9	34	43		7	7	14		14	14	28	
Railways and Seafaring	65	43	108		34	4	38		1	1	2		3	1	4		1	1	2	
Agricultural	69	78	147		33	34	67		6	10	16		10	11	21		2	3	5	
Trades	6	5	11		3	4	7		3	6	9		3	5	8		3	5	8	
Manufacturers	7	7	14		2	1	3		1	2	3		2	2	4		2	2	4	
Hotel-keepers, etc.	10	13	23		3	6	9		5	3	8		3	4	7		3	4	7	
Independent Means	16	80	96		4	37	41		2	18	20		3	45	48		3	10	13	
No Occupation	9	9	18		2	2	4		2	3	5		2	1	3		2	1	3	
Unknown	9	2	11		2	2	4		1	1	2		1	1	2		1	1	2	
Idiots and Imbeciles	11	3	14		1	1	2		1	1	2		1	1	2		1	1	2	
Totals	419	390	809		177	156	333		65	58	123		138	184	322		104	131	235	

## RURAL.

Occupations and Dependents.	Total Persons.				Heredity.				Mental Disorder.				Final Results.							
					Neuropathic.				None.				Ordinary.				Pathological.			
	M.	F.	T.		M.	F.	T.		M.	F.	T.		M.	F.	T.		M.	F.	T.	
Government, Army, etc.	19	7	26		4	3	7		2	2	4		4	3	7		4	3	7	
Clerical	12	14	26		3	6	9		1	1	2		1	1	2		1	1	2	
Legal	19	4	23		13	2	15		6	3	9		4	2	6		4	2	6	
Medical	19	5	24		10	3	13		3	9	12		4	4	8		4	4	8	
Teaching	6	26	32		2	15	17		2	3	5		1	1	2		1	1	2	
Artistic and Literary	12	5	17		8	4	12		3	8	11		3	3	6		3	3	6	
Other Professions	11	4	15		4	4	8		15	15	30		1	1	2		1	1	2	
Domestic Service	41	41	82		8	8	16		9	34	43		7	7	14		14	14	28	
Commercial	128	47	175		69	26	95		9	34	43		7	7	14		14	14	28	
Railways and Seafaring	65	43	108		34	4	38		1	1	2		3	1	4		1	1	2	
Agricultural	69	78	147		33	34	67		6	10	16		10	11	21		2	3	5	
Trades	6	5	11		3	4	7		3	6	9		3	5	8		3	5	8	
Manufacturers	7	7	14		2	1	3		1	2	3		2	2	4		2	2	4	
Hotel-keepers, etc.	10	13	23		3	6	9		5	3	8		3	4	7		3	4	7	
Independent Means	16	80	96		4	37	41		2	18	20		3	45	48		3	10	13	
No Occupation	9	9	18		2	2	4		2	3	5		2	1	3		2	1	3	
Unknown	9	2	11		2	2	4		1	1	2		1	1	2		1	1	2	
Idiots and Imbeciles	11	3	14		1	1	2		1	1	2		1	1	2		1	1	2	
Totals	419	390	809		128	120	248		49	56	105		122	165	287		55	11	66	

TABLE VIII.—Continued.

[illegible]

TABLE IX.—*Chart of Total Numbers, showing the Monthly Incidence of the Attacks, Recoveries, and Deaths. All Certified Cases.*

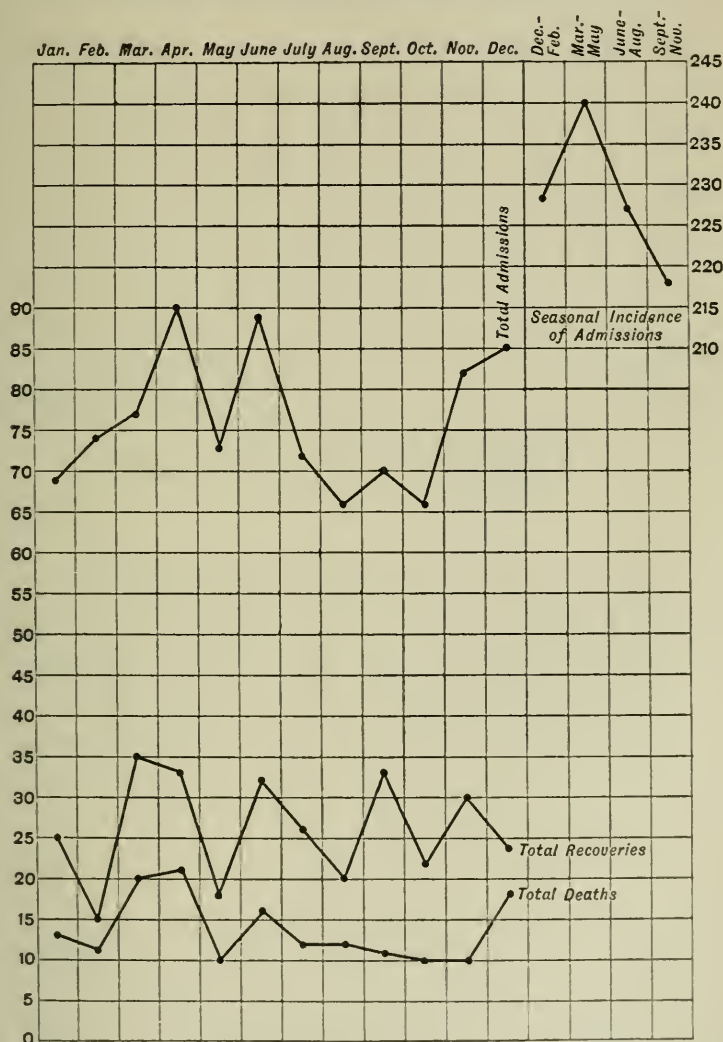




TABLE IXA.—*Chart of (a) Male and Female Admissions, (b) Male Cases of Mania and Melancholia, (c) Female Cases of Mania and Melancholia, showing the Monthly Incidence of the Attacks. Certified Patients.*

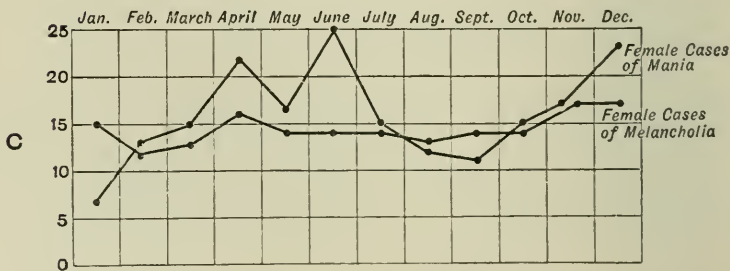
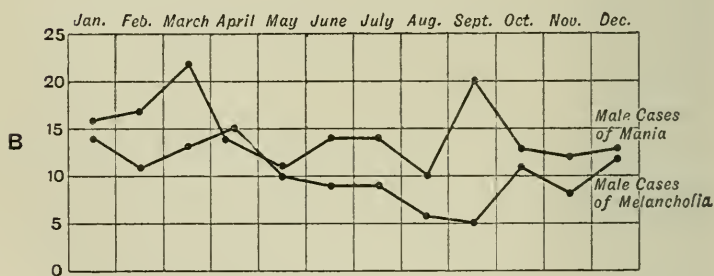
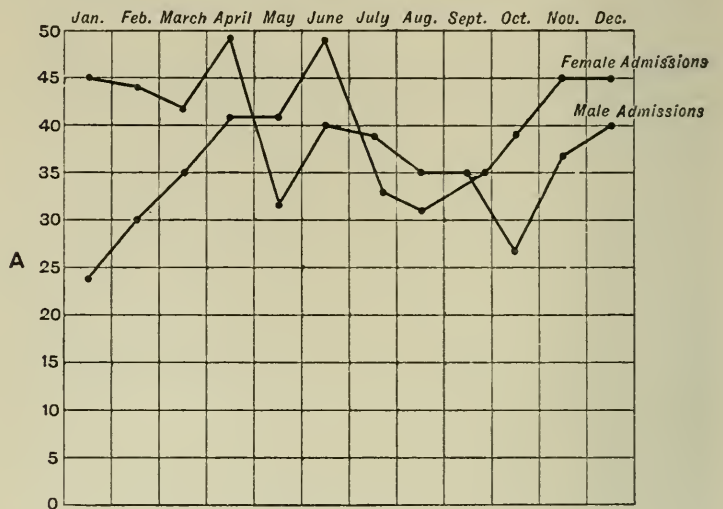
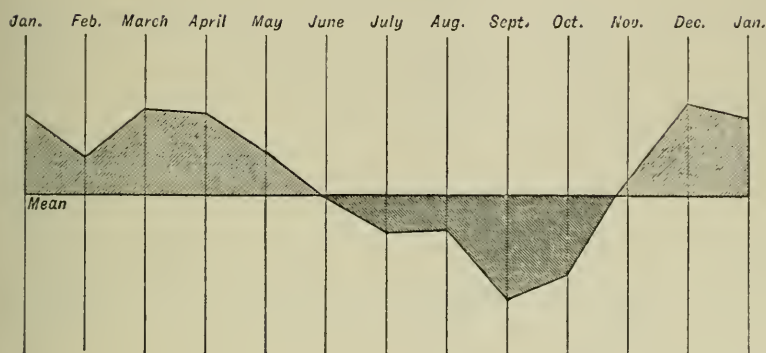


CHART IXB.



767 Cases, showing the curve of monthly incidence at inception of attack, constructed from percentages, and showing the incidence in the month immediately preceding and the month immediately following any month.



TABLE XI.—Chart showing Age on First Attack by Quinquennial Periods—Males, Females, and Totals.





TABLE XI.A.—*Chart showing Ages on First Recovery, First Relapse, and Death—Males, Females, and Totals.—*

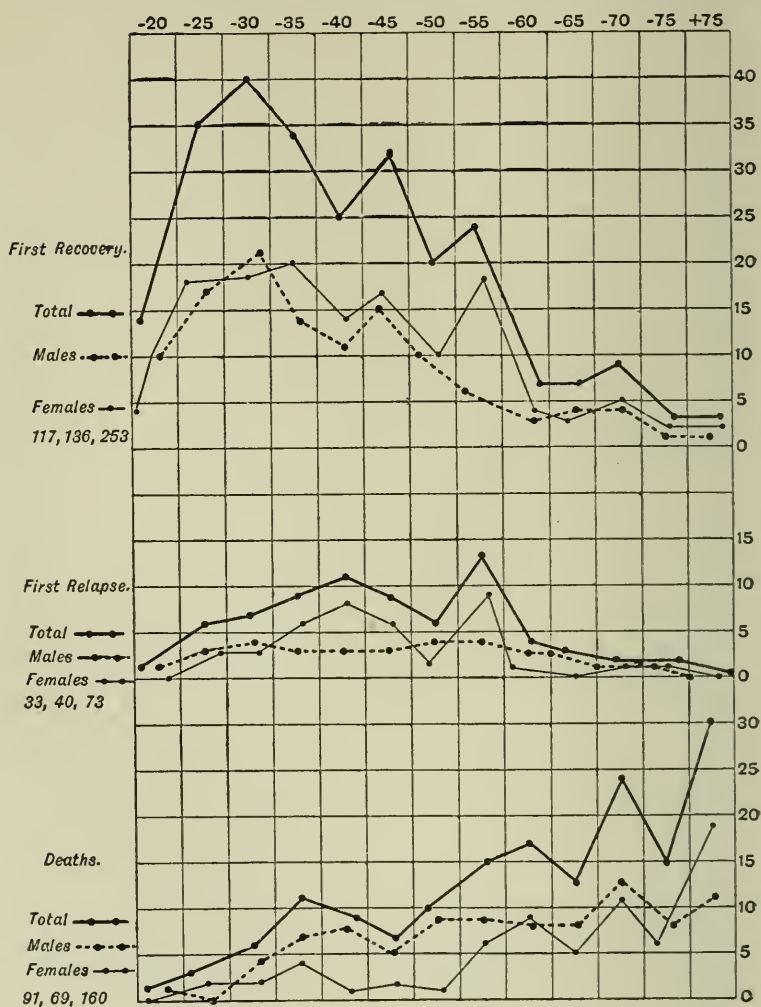


TABLE XIb.—*Showing Age on Death of Patients under observation, compared with the Tables of the Institute of Actuaries.*

Age Group.	INSANE.		H.M. TABLE.		Age Group.
	Average Age at Death.	Percentage of Number of Deaths to Total Number.	Average Age at Death.	Percentage of Number of Deaths to Total Number.	
15-25	21	2	20	5	15-25
25-40	33	16	32	11	25-40
40-60	51	31	51	24	40-60
60-75	67	33	63	36	60-75
Over 75	...	18	82	24	Over 75

TABLE XIc.—*A Statement of Age on First Attack, First Recovery, First Relapse, calculated from information obtained. Age on Death from Asylum Statistics.*

Age on First Attack.				First Recovery.			First Relapse.			Age on Death.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
- 20	45	21	66	10	4	14	1	...	1	1	...	1
25	52	55	107	17	18	35	3	3	6	...	2	2
30	66	68	134	21	19	40	4	3	7	4	2	6
35	55	53	108	14	20	34	3	6	9	7	4	11
40	38	35	73	11	14	25	3	8	11	8	1	9
45	34	38	72	15	17	32	3	6	9	5	2	7
50	29	26	55	10	10	20	4	2	6	9	1	10
5	28	36	64	6	18	24	4	9	13	9	6	15
60	13	13	26	3	4	7	3	1	4	8	9	17
65	17	11	28	4	3	7	3	...	3	8	5	13
70	15	10	25	4	5	9	1	1	2	13	11	24
75	7	9	16	1	2	3	1	1	2	8	7	15
+75	1	7	8	1	2	3	...	...	...	11	19	30
	400	382	782	117	136	253	33	40	73	91	69	160
Unknown	8	5	13									
Idiots .	11	3	14						Idiots	4	...	4
	419	390	809							95	69	164

TABLE XII.—*Showing the Admissions and Recoveries of Persons during Forty Years, so far as Asylum Statistics go.*

	M.	F.	T.	
Persons admitted . . . . .	504	475	979	
Of whom discharged recovered	156	166	322	Being 32·89 per cent. of the persons admitted (M. 30·95, F. 34·94).
Of whom readmitted relapsed .	39	48	87	
Leaving recovered and not relapsed . . . . .	117	118	235	
Relapsed persons recovered .	26	25	51	
Net recovered persons . . .	143	143	286	Being 29·21 per cent. of the persons admitted (M. 28·37, F. 30·10).
<i>Showing Admissions and Recoveries of Cases during Forty Years. Asylum Statistics.</i>				
Admitted . . . . .	599	585	1184	
Recovered . . . . .	180	204	384	Being 32·43 per cent. of the cases admitted (M. 30·05, F. 34·87).



TABLE XIII.—*Recoveries after First Admission, correlated with Neuro-Persons recovered and not*

Form of Mental Disorder on First Attack.	Heredity Neuro-pathic or None.	Number of Recoveries.			AGE PERIODS.																							
					On First Attack.												On Recovery.											
					Adol.			Mat.			Clim.			Senile.			Adol.			Mat.			Clim.			Senile.		
		M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Melancholia, Recent	NP.	19	22	41	6	4	10	8	11	19	2	6	8	3	1	4	5	4	9	9	11	20	2	6	8	3	1	4
	None	8	7	15	...	...	...	4	6	10	3	1	4	1	...	1	...	...	4	6	10	3	1	4	1	...	1	
	Both	27	29	56	6	4	10	12	17	29	5	7	12	4	1	5	5	4	9	13	17	30	5	7	12	4	1	5
Melancholia, Chronic	NP.	19	14	33	6	5	11	8	6	14	4	3	7	1	...	1	2	...	2	7	5	12	9	8	17	1	1	2
	None	5	7	12	3	1	4	1	...	1	1	4	5	...	2	2	1	...	1	3	1	4	1	4	5	...	2	2
	Both	24	21	45	9	6	15	9	6	15	5	7	12	1	2	3	3	...	3	10	6	16	10	12	22	1	3	4
Mania, Recent	NP.	30	30	60	8	10	18	15	12	27	7	8	15	...	...	...	8	9	17	15	13	28	6	8	14	1	...	1
	None	10	14	24	6	4	10	2	4	6	2	5	7	...	1	1	4	4	8	4	4	8	2	5	7	...	1	1
	Both	40	44	84	14	14	28	17	16	33	9	13	22	...	1	1	12	13	25	19	17	36	8	13	21	1	1	2
Mania, Chronic	NP.	13	26	39	7	8	15	3	9	12	1	8	9	2	1	3	5	2	7	4	9	13	2	13	15	2	2	4
	None	11	5	16	2	2	4	5	2	7	2	1	3	2	...	2	...	2	2	7	1	8	2	1	3	2	1	3
	Both	24	31	55	9	10	19	8	11	19	3	9	12	4	1	5	5	4	9	11	10	21	4	14	18	4	3	7
Delusional	NP.	1	4	5	...	...	...	1	2	3	...	2	2	...	...	...	...	...	1	3	4	...	1	1	...	...	...	...
	None	2	1	3	...	1	1	2	...	2	...	...	...	...	...	...	1	1	2	...	2	...	...	...	...	...	...	
	Both	3	5	8	...	1	1	3	2	5	...	2	2	...	...	...	1	1	3	3	6	...	1	1	...	...	...	...
Dementia	NP.	2	1	3	...	...	...	...	...	2	1	3	...	...	...	...	...	...	...	...	...	2	1	3	...	...	...	...
	None	...	1	1	...	...	...	1	1	1	...	...	...	...	...	...	...	...	1	1	...	1	1	...	...	...	...	...
	Both	2	2	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...
Totals Neuropathic		84	97	181	27	27	54	35	40	75	16	28	44	6	2	8	20	15	35	36	41	77	21	37	58	7	4	11
,, None		36	35	71	11	8	19	14	13	27	8	11	19	3	3	6	5	7	12	20	13	33	8	11	19	3	4	7
,, Both		120	132	252	38	35	73	49	53	102	24	39	63	9	5	14	25	22	47	56	54	110	29	48	77	10	8	18

*pathic Heredity, Age Periods, and Duration since First Attack. Also relapsed. Certified Patients.*

DURATION SINCE FIRST ATTACK IN MONTHS AND YEARS.																					RECOVERED.														
-3 mos.			-6 mos.			-12 mos.			-2 years.			-3 years.			-5 years.			-10 years.			-20 years.			-30 years.			+30 years.			Relapsed.			Not Relapsed.		
M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.			
2	..	2	7	6	13	5	8	13	5	5	10	..	1	1	..	1	1	..	1	1	..	..	..	..	..	..	..	..	8	4	12	11	18	29	
2	1	3	..	..	..	5	4	9	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	6	5	4	9		
4	1	5	7	6	13	10	12	22	6	7	13	..	1	1	..	1	1	..	1	1	..	..	..	..	..	..	..	11	7	18	16	22	38		
2	..	2	3	..	3	3	..	3	6	..	6	..	3	3	2	3	5	1	4	5	2	..	2	..	2	2	..	2	2	16	12	28	3	2	5
..	..	..	3	..	3	1	1	2	1	..	1	..	1	1	..	2	2	..	1	1	..	1	1	..	1	1	..	4	4	8	1	3	4		
2	..	2	6	..	6	4	1	5	7	..	7	..	4	4	2	5	7	1	5	6	2	1	3	..	3	3	..	2	2	20	16	36	4	5	9
8	7	15	12	12	24	7	8	15	3	2	5	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	11	14	25	19	16	35		
1	3	4	5	7	12	4	3	7	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	5	11	4	9	13		
9	10	19	17	19	36	11	11	22	3	3	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	19	36	23	25	48		
3	..	3	..	..	..	4	2	6	2	4	6	1	5	6	2	3	5	1	6	7	..	4	4	..	2	2	..	10	26	36	3	..	3		
..	..	..	4	..	4	2	..	2	3	3	6	..	..	1	..	1	1	1	2	..	1	1	..	..	..	..	..	8	4	12	3	1	4		
3	..	3	4	..	4	6	2	8	5	7	12	1	5	6	3	3	6	2	7	9	..	5	5	..	2	2	..	18	30	48	6	1	7		
..	..	..	1	1	..	..	..	1	1	..	..	..	..	1	1	1	1	2	..	..	..	..	..	..	..	..	..	..	2	2	1	2	3		
..	..	..	..	..	1	1	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2	..	2		
..	..	..	1	1	1	1	1	2	1	1	2	..	..	1	1	1	1	2	..	..	..	..	..	..	..	..	..	..	3	3	3	2	5		
..	1	1	1	..	1	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	1	2		
..	1	1	1	..	1	..	..	..	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1		
..	2	2	2	..	2	..	..	..	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	2	3		
15	8	23	23	19	42	19	18	37	16	12	28	1	10	11	5	8	13	3	12	15	2	4	6	..	4	4	..	2	2	46	58	104	38	39	77
3	4	7	12	7	19	13	9	22	6	6	12	..	1	1	1	3	4	1	2	3	..	2	2	..	1	1	..	21	17	38	15	18	33		
18	12	30	35	26	61	32	27	59	22	18	40	1	11	12	6	11	17	4	14	18	2	6	8	..	5	5	..	2	2	67	75	142	53	57	110

TABLE XIII.A.—*Relapsed Cases.*

	M.	F.	T.		M.	F.	T.
First Admissions	419	390	809	—of whom these had one or more previous attacks	92	103	195
Readmissions . .	76	97	173	—of whom these were admitted relapsed	31	45	76
Total	495	487	982		123	148	271
				Add reported relapsed after final discharge	11	7	18
					134	155	289

## RELAPSED PERSONS.

(289 Cases as above referable to 250 Persons.)

	M.	F.	T.	
Of 250 persons	81	74	155	had 2 attacks, being 19·15 % of 809.
	16	22	38	„ 3 „ „ 4·60 „
	2	13	15	„ 4 „ „ 1·85 „
	0	3	3	„ 5 „ „ 0·36 „
	3	2	5	„ 6 „ „ 0·61 „
	12	11	23	had many „ „ 2·96 „
	5	6	11	unknown number, „ 1·36 „
	131	250		Sum 39·93 „

## Or

	Recovered here after First Admission.	Recovered after Removal.	Recovered after Removal and Readmission.	Total.
Of Males . . . 419	120	25	1	146
„ Females . . . 390	132	26	3	161
Total . . . 809	252	51	4	307

## Not Relapsed.

Of Males . . . 146	53	12	1	66
„ Females . . . 161	57	14	2	73
Total . . . 307	110	26	3	139

## Percentages.

	Total Recoveries 34·84%	Permanent Recoveries 15·75%
Of Males . . . 419	„ „ 41·23%	„ „ 18·71%
„ Females . . . 390	„ „ 37·94%	„ „ 17·18%
Total . . . 809		

TABLE XIV.—*Causes of Death, correlated with Neuropathic Heredity and Forms of Mental Disorder on admission. Certified Patients admitted and readmitted. Asylum Statistics.*

		FORMS OF ORDINARY INSANITY.														
Cause of Death.		Melancholia.			Mania.			Delusional.			Dementia.			Aggregate.		
		M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Cerebro-Spinal . .	NP.	3	..	3	11	10	21	3	..	3	15	2	17	32	12	44
	O.	2	2	4	7	6	13	3	1	4	8	1	9	20	10	30
	Aggregate . .	T.	5	2	7	18	34	6	1	7	23	3	26	52	22	74
Circulatory . . .	NP.	1	3	4	2	4	6	1	..	1	2	1	3	6	8	14
	O.	..	2	2	2	4	6	2	..	2	1	..	1	5	6	11
	Aggregate . .	T.	1	5	6	4	8	3	..	3	3	1	4	11	14	25
Respiratory . . .	NP.	3	..	3	3	4	7	..	..	..	..	..	..	6	4	10
	O.	1	..	1	1	1	2	1	1	2	2	..	2	5	2	7
	Aggregate . .	T.	4	..	4	4	9	1	1	2	2	..	2	11	6	17
Alimentary . . .	NP.	..	3	3	1	..	1	..	..	..	..	1	1	1	4	5
	O.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Aggregate . .	T.	..	3	3	1	1	..	..	..	..	1	1	1	4	5
Urinary . . . .	NP.	..	1	1	2	1	3	..	2	2	..	1	1	2	5	7
	O.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Aggregate . .	T.	..	1	1	2	3	..	2	2	..	1	1	2	5	7
General . . . .	NP.	2	3	5	3	5	8	2	..	2	4	2	6	11	10	21
	O.	1	1	2	1	3	4	..	1	1	2	2	4	4	7	11
	Aggregate . .	T.	3	4	7	4	8	2	1	3	6	4	10	15	17	32
Accidental . . .	NP.	..	1	1	2	..	2	..	..	..	1	..	1	3	1	4
	O.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Aggregate . .	T.	..	1	1	2	2	..	..	..	1	..	1	3	1	4
Grand Aggregate {	NP.	9	11	20	24	24	48	6	2	8	22	7	29	61	44	105
	O.	4	5	9	11	14	25	6	3	9	13	3	16	34	25	59
	T.	13	16	29	35	38	73	12	5	17	35	10	45	95	69	164



TABLE XV.—*Age at Death, with duration of Fatal Malady and duration of Mental Disorder from First Attack.*  
*All Deaths from first admissions and readmissions. Asylum Statistics.*

Age at Death in Years.		Duration of Fatal Malady.										Duration of Mental Disorder.										Total Deaths.		
		-1 mo.	-3 mos.	-6 mos.	-9 mos.	-1 yr.	-2 yrs.	-3 yrs.	+3 yrs.	-3 mos.	-6 mos.	-9 mos.	-1 yr.	-2 yrs.	-3 yrs.	-4 yrs.	-5 yrs.	-10 yrs.	-20 yrs.	-30 yrs.	-40 yrs.		-50 yrs.	-60 yrs.
Males.																								
-15.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-20.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-25.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-30.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-40.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-45.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-50.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-55.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-60.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-65.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-75.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-80.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-90.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Totals	30	3	2	2	2	5	5	10	38	16	7	7	3	8	11	5	1	6	12	4	5	5	5	95
Females.																								
-15.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-20.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-25.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-30.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-35.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-40.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-45.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-50.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-55.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-60.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-65.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-70.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-75.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-80.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-90.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Totals	26	8	4	4	2	7	3	20	7	5	4	4	3	11	6	2	13	4	2	6	3	5	1	69
Grand Totals	56	11	6	6	7	7	8	10	64	23	12	11	3	11	19	11	3	19	16	6	8	10	1	164

TABLE XVII.—*Showing the Incidence of Heredity in Patients addicted to the intemperate use of Alcohol and Drugs. Certified Class.*

Heredity of—				Percentage calculated on 110.		
	M.	F.	T.	M.	F.	T.
Insanity . . . .	39	8	47	45·88	32·00	42·73
Neuroses . . . .	5	1	6	5·88	4·00	5·45
Alcoholism . . . .	16	8	24	18·83	32·00	21·82
None ascertained . .	25	8	33	29·41	32·00	30·00
	85	25	110	100·00		

By Periods—				Percentage calculated on 110.		
First to 1884 . . .	10	3	13	11·77	12·00	11·82
Second to 1894 . .	22	5	27	25·88	20·00	24·54
Third to 1904 . . .	53	17	70	62·35	68·00	63·64
	85	25	110	100·00		

TABLE XVI.—*Correlations of Sonatic Disorders.*

Bodily Disorders, etc.	SENSORY DISORDERS.						APPETITES.				DISORDERS OF EMOTION.						DELUSIONS.						Suicidal.	Homicidal.	Marked De- generation.	
	Sight.	Hearing.	Smell.	Taste.	Touch.	Visceral.	Total.	+ Food.	+ Sex.	+ Sleep.	Total.	Depression.	Excit.	Pervert.	Weak.	Total.	Deprec.	Grand.	Persec.	Fear.	Identity.	Others.				Total.
Somatic Stigmata	M. 21	1	1	1	1	1	3	1	1	1	5	2	2	2	1	1	6	2	1	2	1	2	1	9	2	16
	F. 9	2	1	1	1	1	3	1	1	1	3	2	2	2	1	1	6	1	2	1	1	1	4	1	9	
	T. 30	3	1	1	1	1	7	1	2	2	4	3	2	2	1	1	6	3	3	3	1	3	13	2	25	
Hæmopoietic	M. 12	1	1	1	1	1	2	2	1	3	6	1	4	1	7	12	1	6	1	3	7	2	13	1	3	
	F. 25	4	8	3	1	1	22	8	5	9	22	4	6	3	3	16	6	3	3	9	2	26	8	4		
	M. 58	3	8	3	1	1	6	2	7	11	30	12	11	3	5	53	23	5	10	27	5	53	13	7		
Cardio-vascular	F. 69	11	9	3	2	10	37	11	6	11	59	18	21	9	5	53	23	5	21	10	11	2	72	18	5	
	T. 104	18	26	7	6	4	21	2	12	1	117	35	42	15	20	112	39	18	64	17	24	2	164	40	19	
	M. 5	2	1	1	1	1	4	1	1	1	1	1	1	1	2	3	1	1	2	1	1	1	4	1	3	
Respiratory	F. 5	1	2	1	1	1	4	1	1	1	1	1	1	1	1	1	4	1	1	1	1	1	4	1	3	
	T. 10	2	1	1	1	1	8	1	1	1	2	1	2	1	3	7	1	2	4	1	1	1	8	1	6	
	M. 72	5	13	4	3	1	38	5	4	30	47	18	15	9	5	47	16	8	28	11	6	1	70	19	7	
Gastro-intestinal	F. 75	11	14	5	4	10	44	1	10	1	38	20	24	8	7	59	22	6	24	6	9	1	68	23	6	
	T. 147	16	27	9	5	22	82	6	14	1	116	38	39	17	12	106	38	14	52	17	15	2	138	42	13	
	M. 5	1	1	1	1	1	2	1	1	1	3	2	1	1	1	3	3	3	1	1	2	1	8	3	1	
Renal and Vesical	F. 4	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	
	T. 9	2	2	1	1	1	6	1	1	1	2	2	1	1	1	4	3	1	3	1	2	1	10	4	1	
	M. 1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	1	
Generative	F. 79	11	10	3	4	10	38	1	11	1	57	10	11	12	7	40	28	7	29	11	13	2	90	21	10	
	T. 80	11	10	3	4	10	38	1	11	1	58	11	11	12	7	41	29	8	29	12	14	2	94	22	10	
	M. 14	3	2	1	1	1	5	2	1	1	4	1	2	2	2	4	2	2	8	1	1	1	13	7	4	
Skin	F. 13	1	3	2	1	2	9	1	1	1	3	1	1	1	1	4	2	2	2	1	1	1	7	2	5	
	T. 27	1	5	3	2	2	14	1	1	1	7	1	3	2	1	6	4	4	10	1	1	1	20	2	9	
	M. 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Tot. of above—M. 188, F. 279 =		407	52	71	24	16	57	237	11	76	40	311	90	100	48	44	252	116	50	165	50	60	6	447	113	43





*On the Psychology of the Crusades.* II. By WILLIAM W. IRELAND.

IN the "children's Crusade" we witness the enormous credulity of the Dark Ages in its simplest form, although the delusions which the children indulged in must have been encouraged by their parents. The orders of the King of France to stop their pilgrimage had evidently been disregarded. Was it that a whole people had become mad? Some writers have argued that nobody is quite sane; in that case we should need another word for those who cannot do without restraint.

No doubt amongst the crowd of pilgrims there were persons, frenzied, hysterical, paranoiacs, not without their influence in inciting the others; but the bulk of the Crusaders were different from ordinary lunatics. The inmates of an asylum could not be united for any one purpose; if they show any general desire, it is to be set at liberty, which they could effect if they would only combine.

Granting their premises to be true, the pilgrims cannot be said to have acted illogically. If, as they believed, the Church could grant them a sure entry into heaven by taking the cross, it was bare wisdom to accept such a permit as a lucky chance; whatever befel they would escape impending damnation and gain eternal happiness. In the present day there are many persons who profess beliefs in which they have not sufficient faith to lead to action. Indeed, it is amazing how many inconsistent beliefs some people nowadays quietly entertain without troublesome comparisons.

We have such graphic accounts of the first Crusade that the characters of its leaders stand out with unusual clearness. Of Robert, the unfortunate Duke of Normandy, the eldest son of William the Conqueror, we know enough. Godfrey of Bouillon was renowned for his prowess: he is reported to have cut a Saracen in two so that the one portion of the body was carried away by his horse. He is described as tall and thin, agreeable in conversation, with an inexhaustible sweetness of character. We are pleased to learn that on the taking of Jerusalem he did not join in the massacre, but went humbly to say his prayers at the Church of the Holy Sepulchre. Bohemund, the Norman, from Sicily, is described as taller by

the head than the other chiefs. He was much feared by the Greek emperor and regarded both by the Christians and Mohammedans as the ablest in council; brave but prudent, he never forgot his own aggrandisement. It is worthy of note that both Bohemund and Baldwin the brother of Godfrey were made prisoners by the Saracens, who might have put them to death, as the Mexicans did the Emperor Maximilian, in revenge for the massacre of the Mussulmans at Jerusalem. However, neither of these chiefs was actually present at the storming of that city and their captors were satisfied with a heavy ransom. Tancred, a relative of Bohemund who followed him from Sicily, left the reputation of a gallant knight-errant ever seeking brave adventures, punctilious of honour and quarrelsome, but, like the rest of the Normans, ambitious and eager for gain. Tancred appears as the most attractive character in Tasso's great epic "*Jerusalem Delivered*."

The Abbot Guibert<sup>(1)</sup> has some very edifying accounts of the rigid chastity of the Crusaders in the leaguer of Antioch. Evidently unacquainted with the habits of soldiers, he feels safe in presuming that those who were every day exposed to lose their lives could not abandon themselves to sensual passions. No prostitutes were suffered in the camp. If a woman who had no husband was found to be pregnant, she was forthwith severely punished along with her seducer. A monk from a celebrated convent was surprised with a woman. Convicted by the ordeal of red-hot iron, he was, by the orders of the Bishop of Puy and the Princes, walked through the whole camp along with his concubine. They were then stripped naked and whipped, to the great edification of all who witnessed the sight.

Yet there are other passages which hardly bear out this exemplary state of things. The dissolution of home ties and the mingling of pilgrims of both sexes in a disorderly march gave both temptation and opportunity. Moreover, one might fairly infer that the promise of complete forgiveness of sins without any repentance following upon a pilgrimage to Jerusalem or to Rome was not conducive to morality. Another writer of the Crusades gives us a lurid picture of the corruptions of the morals in those days amongst both the laity and the clergy.

Men beset with one idea have effected wonderful things in

the world's history, and no fanatic has done more mischief than Peter the Hermit. Anna Comnena<sup>(2)</sup> tells us that her father, the Emperor Alexis, who had sent a party to rescue him from the Turks, in a friendly way reminded Peter how he had neglected his advice. The Hermit, who had left so many thousands to perish, boldly replied that he was not to blame for the evil which had come upon them because they had neglected the commands of God and his own counsel. They were, he said, "brigands and robbers not worthy to be admitted to the adoration of the holy sepulchre." No doubt many scoundrels had followed his leading, but there must have been not a few humble, trusting, pious souls who in their simple faith wished to give back to God love for love, sacrifice for sacrifice, and thought to exchange the cares and miseries of the world for the eternal joys of Paradise. The Greek princess describes the huge piles of bones which she saw about Nicæa, lately the framework of living men and women, who might have peacefully finished their lives in their own villages had they not been led to destruction by those whom they so blindly trusted.<sup>(3)</sup>

Peter, who had not lost his sanctity in the eyes of the common people, accompanied the army of the princes and counts, acting as a guide to a crowd of beggars who had followed the camp.

A man from Normandy managed to keep this disorderly crowd under some rule: he called himself King of the Tafurs, or tramps; he would not allow his followers to keep in their possession any money whatever. These men made themselves useful in carrying burdens, in foraging and scouting, though it was dangerous to enter their encampment. Anna Comnena tells us that the first host of Crusaders led by Peter on entering Asia Minor, amongst other enormities, dismembered sucking children, transfixed them with wooden spits, and roasted them. The Abbot Guibert admits that in some times of great distress they were reduced to eating pieces of the flesh of the Saracens. Raoul de Caen, himself a Crusader, confesses that some men in the pangs of hunger came to eat human flesh, and that they had thrown young Gentiles into the pot, and had put infants upon the spit, roasted, and eaten them. Raimond d'Agiles tells us that at Marpah some of the besiegers greedily devoured the bodies of the Saracens which had already lain for a fort-

night in the ditches of the town. In the old French ballads quoted by von Sybel these horrible feasts are loudly proclaimed. As they lay in leaguer before Antioch :

“In evil case the army stood, their stores of food were spent,  
Peter the Holy Hermit, he sat before his tent.  
Then came to him the King Tafur, and with him fifty score  
Of men at arms, not one of them but hunger gnawed him sore.  
‘Thou holy Hermit, counsel us, and help us at our need,  
Help, for God’s grace, these starving men with wherewithal to feed.’  
But Peter answered, ‘Out, ye drones ; a helpless pack that cry,  
While all unburied round about the slaughtered Paynim lie ;  
A dainty dish is Paynim flesh, with salt and roasting due.’  
‘Now by my fay,’ quoth King Tafur, ‘the Hermit sayeth true,’  
Then fared he forth the Hermit’s tent, and sent his menye out  
More than ten thousand, where in heaps the Paynim lay about.”

We may spare the reader the disgusting description that follows.

Some of the Christian princes passing that way, the Emir cried from the walls :

“‘To do dead bodies such foul wrong is insolence and sin.’  
But Bohemund made answer : ‘Fair lord, what here ye see  
Is none of our commanding, nor wight thereof have we.  
’Tis King Tafur’s devising, his and his devil’s crew,  
An ill rout are they, God wot.’”

We have the testimony of Guibert that the hardships of the siege were too much for the hermit, who fled with some others, but was persuaded by Tancred to return: even this scandal did not destroy his influence.<sup>(5)</sup> After the crusading host had entered Antioch they were surrounded by a Moslem army and reduced to great distress. Peter the Hermit was sent with four others as an envoy to deliver a challenge to the Emir Kerbogha the Commander of the Persian Army. The interview is graphically described by Raoul de Caen. Peter, a man short of stature, of a tawny complexion and a lean face, in a shabby gown, with naked feet, and mounted upon a pony poorly harnessed, approached the Saracens’ camp. They thought he had come as a suppliant, but, standing erect, the hermit ordered the Persian general to withdraw the army or, if he refused, to appoint an equal number of champions, three or six, to decide to whom the city should belong. The Persian emir, thinking he had the invaders in his power, returned a haughty and



menacing answer. The courage of the host was again revived by one of those visions which were frequent amongst these credulous devotees. A Provençal peasant named Pierre Barthelemi came to the Bishop of Puy, who was with the besieged army in Antioch, announcing that the apostle St. Andrew had appeared to him several times, revealing to him that the head of the lance which had pierced the side of the Saviour at the crucifixion lay buried in the Church of St. Peter, at that time used as a mosque. The saint actually took him to the spot and told him that by obtaining this weapon the victory of the Christian host would be secure. Twelve men dug all day at the place pointed out; nothing was found till the evening, when Pierre himself descended into the hole and promptly struck upon the lance-head. This find was received with great enthusiasm, and the lance was borne in front of the troops in a vigorous sally in which the Mohammedan army was scattered. The Provençals attributed the victory to the favour of St. Andrew and the holy lance. Count Bohemund, who was more a politician than a devotee, pointed out the incoherency of the story, which was supported by Raimond, Count of St. Giles and the Provençals. In denouncing the imposture Bohemund was seconded by the Dukes of Normandy and Flanders. Great quarrels ensued, when Pierre was called upon by the Council to submit his pretensions to the ordeal of fire. He was to make his way nine paces through two rows of flaming bushes. It was assumed that if his story were true he should come through the fire safe and sound; after three days' fasting and praying, Pierre, clad in a tunic and drawers, passed through the flames. Raoul de Caen says that though he got through he fell down all burned, and died the next day, on which the people saw that he was an impostor, who had got what he deserved. Guibert tells us that Pierre went twice through the fire, obviously an embellishment of the story. Foulcher de Chartres tells us that the man died after twelve days, when people recognised that he was an impostor. The Provençals would not give him up so easily. Raimond d'Aigles, who was present both at the finding of the lance-head and the man's death-bed, says that on his emerging from the flames the people crowded upon him and trampled him so that his back and his ribs were broken, which was the real cause of his death. Pierre himself, when asked to explain some burns noted upon

his legs, averred that Christ had appeared to him while in the middle of the flaming way and took him by the hand, saying : "Since you have doubted about the discovery of the lance when St. Andrew revealed it to you, you will not get through without injury ; but you will not see hell." Raimond assures us that in his last hour Pierre swore that he had told nothing but the truth. The Count of St. Giles retained his faith in the genuineness of the relic, and kept the lance-head with him till it was accidentally lost.

This story vividly displays the stupid credulity of the Middle Ages. They could only test an imposture by making use of a delusion. In those days, when portents and miracles were rife, it was thought a fair deduction that God would suspend the ordinary laws of combustion to save an innocent person, and that the usual action of fire on the skin was a proof of guilt. The steadfast believers in Pierre's stories might have wondered why the Divine protection was withdrawn after he had passed through the flames, so that he was fatally injured by the crowd immediately after.

During the first twenty years of the kingdom of Jerusalem the Franks held only a few fortified towns ; the country was ravaged by the Moslems. They were even abetted and sheltered by the Syrian Christians, who did not disguise their hatred of the new-comers, whose rule only made their condition worse. Baldwin, who succeeded Godfrey, had made himself master of the towns by the coast ; but even the road between Jerusalem and the seaport of Jaffa was so insecure that it could not be traversed without an escort. In 1119 Hugo de Paynes formed a brotherhood which took the name of the Poor Knights of Christ from the Temple of Solomon. Taking as their rule *Estis monachi virtutibus, milites actibus*, they soon earned great praise for the austerity of their lives and their bravery against the Saracens. They gained largely from the pilgrims whom they protected, and the order received rich endowments in all Christian lands. They are said to have possessed more than nine thousand residences in Christendom. Their ranks were reinforced by banished or excommunicated knights who took the vows of pilgrimage as an atonement for heinous sins. Brought to the front, their turbulent spirits were expended in warfare against the infidel. The sovereign who had banished these offenders might be content to get rid of

them, but the Church did not wish transgressors to escape her anathemas without penances, so she was displeased with those military monks of the temple who lightly absolved their wild companions in arms or buried them with holy rites when they fell in combat. The force of events made the Templars lose the bigotry of the early Crusaders in Palestine ; in Syria they came into contact with the Mohammedans and soon learned the falsehood of the calumnies against them. Christians and Mussulmans had disputes about their varying faiths, and though they seldom made converts, they infused doubts into one another's minds.

Many of the Templars belonged to the country of the Albigeois, against whom the Pope had directed a bloody crusade followed by a cruel inquisition, and the suspicion of heresy long clung to the order. It was said that in their secret rites the initiated were made to deny Christ and spit upon the cross, and that they believed in two gods, one inferior to the other ; they were accused of filthy immoralities, and it was undeniable that they led luxurious and licentious lives in their endowed seats. They were even accused of having treacherously connived with the Turks to cause the siege of Damascus to miscarry. <sup>(6)</sup> It is a question in history which will never be solved whether there was any truth in these accusations of impiety which wrecked them in the popular mind, and which were taken advantage of by Philip the Fair to suppress the order, with the consent of the Pope. Some historians have explained that the denial of Christ was at first simply a trial of obedience of the neophyte, or that it was a rehearsal of the denial of St. Peter, or that it was a ceremony gone through to fulfil a promise of a grand master of the Order, made in captivity to a Sultan. In any case, they admit that the ceremony had lost its significance ; what had been done as a play was in the end treated as a serious matter, and this goes far to imply easy indifference to the Christian spirit, if not a pronounced scepticism. <sup>(7)</sup>

Western Europe had entered into the Crusades in the entire belief that they were doing the will of God ; thus they counted on the Divine assistance. The ecclesiastics attributed the first disasters to the sins of the pilgrims, although we learn that these misfortunes had induced some of the captives to turn to the faith of Islam. The taking of Jerusalem was, naturally,

held to be the fulfilment of the Divine protection ; but when Jerusalem was lost, and the tide of war kept steadily against the Christians, the Templars, their mission gone, idle and discontented in their rich endowments, began to entertain misgivings whether God was really on their side. Such doubts were boldly expressed in the verses of a Provençal poet<sup>(8)</sup> After the news came that Bibars, the Sultan of Egypt, had taken the town of Cæsarea and the Castle of Arsouf in 1265, the poet thus exclaims : " Ah, Lord God, what has become of so many knights, so many servants, so many citizens, who were within the walls of Arsouf? These accursed Turks have sworn not to leave in these places a single man who believes in Jesus Christ. They say that they will make a mosque of the Church of St. Mary. Well, if God, whom all that should displease, consents, and finds it good, we must also be satisfied. He is very foolish who seeks to quarrel with the Turks when Jesus Christ permits everything to them. What wonder that they have conquered Franks and Tartars, Armenians and Persians, and that they beat us Templars every day. God, who formerly watched, now sleeps while Mohammed puts out his whole strength and helps his servant Malek-Daher [Bibars]."

The historian of the Hospitallers<sup>(9)</sup> believes that the order existed in Jerusalem as a charitable brotherhood to relieve pilgrims even before the taking of that city. In the next generation the hospital took a military character. Although it soon became richly endowed, the Hospitallers never attracted the same suspicion and odium as the Knight Templars, and on the fall of the latter order the Hospitallers came into possession of much of their rich endowments.

The kingdom of Jerusalem took no root in Eastern soil. The defenders of the Holy Sepulchre were reinforced by penitents and devotees who came in Genoese or Venetian galleys, eager for fighting, difficult to hold in, breakers of truces, bold raiders, the terror of the Mecca pilgrims. The Syrian Christians, who had hailed the coming of the first Crusaders, soon found that they had gained nothing from changing the yoke of the Mussulman for the feudal rule of the Franks and the supremacy of the Western Church. The children of the first Crusaders who stayed in Palestine grew up a weaker race in that hot climate. While the Mohammedans were engaged in a death struggle with the Frankish invaders, the Emperor



Alexius was busy regaining some of his lost territory in Anatolia. The Turks were driven from the islands of Rhodes and Chios, and the Greek dominion was extended along the coast from the Hellespont to the Syrian Gates. In the prosecution of the Emperor's claim of sovereignty the Byzantine troops came to blows in Cilicia with Bohemund and Tancred, the Norman rulers of Antioch.

As the Franks were losing ground in Palestine the Pope, Eugenius III, charged the celebrated St. Bernard to preach a new crusade. Beyond the purity of his life, his eloquence and learning, there must have been some great reserve power of character which made the Abbot of Clairvaux the oracle and champion of the Catholic Church, the arbiter between rival popes and worldly potentates. His Life has been written by three of his contemporaries, one of whom was his secretary, who attributed to him numerous miracles. A great assembly was held at Vezelai like that held fifty years before at Clermont. A scaffolding was erected in the plain from which Bernard addressed the multitude; King Louis VII, with many of his nobles, took the cross from the hands of the Abbot. The report of some miraculous cure increased the enthusiasm of the multitude and of the people, and confirmed their faith in the predictions of the saint, who promised signal victory and conquest for the arms of the French king. Bernard was able to write to the Pope: "The Crusaders are multiplied beyond counting; in the cities and castles for seven women you may scarcely find one man; everywhere you will find widows whose husbands are alive." A man of much superior capacity to Peter the Hermit, St. Bernard had sense enough to refuse the request that he should take command of the Crusades. France was again aflame, and the movement passed to Germany. As before, it began with a massacre of the Jews in the Rhine country. St. Bernard went on to Germany, and although he did not understand the language of the country, he succeeded in inducing the Emperor, Conrad III, to take the cross. At the same time the holy man stirred up the Saxons to make a religious war against the heathen Wends.

It is said that the Pope, who wanted Conrad's assistance for other purposes, was aghast at the success of his missionary. The King of France left the Abbot Segur, who tried to dissuade him from the Crusades, in the charge of affairs at home.

Louis himself took the march with an army said to amount to 260,000, Conrad with 100,000 infantry and 60,000 horse. These figures are probably not founded upon accurate numeration, though it is averred that the Greeks counted 900,000 Crusaders who crossed the Hellespont. Had the Christian princes acted in unison, there was no power in the East which could have resisted them, but the Greek Emperor, Manuel, was terrified by the march of these hordes so near his capital, and had to guard his western territory against the Norman King of Sicily. Advancing through a desolated country, the unwieldy hosts of the Germans were thinned by hunger and exhaustion and finally cut off by the Turks. Conrad, escaping to Constantinople, met the French King advancing, but Louis refused to profit by the other's experience. The Greeks were accused of giving false intelligence and even of a secret alliance with the Turks. After some bloody defeats the King of France was glad to escape from the Cilician shores with the rest of his knights, leaving the plebeian crowd to the mercy of the Seljuks.

These miserable failures aroused loud murmurs against St. Bernard. His biographer<sup>(10)</sup> consoles himself with the thought that if the Eastern Church was not delivered by the expedition it at least served to fill the celestial Church with pious souls. The saint defended himself after a lofty fashion: "If it is absolutely necessary that people should do one of two things, murmur against God or myself, I prefer that the murmurs of men should fall upon myself rather than upon the Lord." His biographer tells us that at the time when the first report of the rout of the crusading army was spreading through France a man brought his son who was blind, imploring St. Bernard to restore his sight. The holy man, putting his hand upon the child, prayed to the Lord that if it was really His word which Bernard had uttered, or if the Holy Ghost had really inspired him when he preached the Crusade, God should deign to prove this by opening the eyes of the blind. On which the child cried out, "What ought I to do now? for I see."

The Crusaders regarded the Greeks as false and treacherous allies, while the Greeks were alarmed at the cupidity and ambition of the Franks. This chronic hatred ended in an army of the Franks with a Venetian fleet taking Constantinople and establishing a new kingdom there. The Greek empire,

deprived of its capital, was broken into three pieces, and fifty-six years elapsed before the plunderers were expelled. Thus the fourth Crusade, ostensibly for the recovery of the Holy City, ended in the pillage and weakening of the Byzantine empire.

The Pope Honorius III had exacted a vow from the Emperor Frederick II before his coronation that he should undertake a crusade for the delivery of Jerusalem. When Frederick succeeded to the Kingdom of Naples and Sicily the papal curia, sometimes swayed by religious and sometimes by political motives, saw with dismay the patrimony of the Church shut in on both sides by the domains of the successor of the German Emperors, with whom they had perpetual contentions. Frederick had, by espousing for his second wife Isabella, the heiress of the Kingdom of Jerusalem, acquired a title to that lost possession. Certainly in delaying to fulfil his vow the Emperor might plead that the popes gave him work enough to do in stirring up his Italian subjects against him. The old enthusiasm had passed away; men were no longer ready to take the cross, and the Emperor had a serious illness, which increased his reluctance. At last the impatient Pope Gregory IX launched upon him an excommunication with an interdict against any place where he might reside. The next year Frederick sailed with a large fleet for the Holy Land followed by the curses of the Pope, who denounced him as a pirate and a friend of Mohammed because he had not solicited to be freed from the ban of excommunication.

The Emperor had none of the religious zeal of the early chiefs of the Crusades. He was known to indulge in philosophical questions most displeasing to the Church, now, not without cause, jealous of heresies, and scepticism. The Court of Frederick had become a centre of Arabian culture and religious indifference.<sup>(11)</sup>

The Emperor knew Arabic, and had learned dialectics from a Mussulman of Sicily. At his Court might be seen astrologers from Bagdad in long robes and Jews employed by the Emperor to translate works of science from the Arabic. He corresponded with sages in different parts of the Mohammedan world.

On landing his army in Palestine Frederick received tidings that the papal troops had entered his Neapolitan territory, and messengers came from the Pope forbidding all with him to obey his orders. This made him willing to make a treaty with the

Saracens, for which the occasion was favourable. There was strife between Alkamil the Sultan of Egypt and the Emir of Damascus. Envoys were sent, presents exchanged—falcons and horses and costly clothes from the Emperor, and an elephant, camels, Arab mares, monkeys, and precious stones from the Sultan. After much negotiation a treaty was signed by both sovereigns by which Alkamil agreed to evacuate Jerusalem and the towns and villages around and leave to the Christians a narrow stretch of country along the coast from Jaffa to Beirut. The mosque of Omar was to be respected, the Mussulmans not to be molested in the exercise of their religion, and the Syrian dominions of the Sultan were to be protected even against the Christian principality of Antioch. On March 17th, 1229, Frederick entered Jerusalem, and next day he was crowned in the Church of the Holy Sepulchre. On the 19th there came the Archbishop of Cæsarea, the Pope's legate, who laid the Holy City under an interdict, to the great indignation of the pilgrims.

The Emperor scandalised his orthodox followers by open mockery of sacred subjects. He visited the mosque of Omar, and the Mussulman guardian who accompanied him was able to repeat pleasantries disagreeable to the zealots of either religion. What little time Frederick spent in Jerusalem was employed in friendly discussions with Arabian *savants* on mathematics and philosophy. In thus winning back the Holy City forty-two years after it was taken by Saladin, the German Emperor had, without drawing the sword, accomplished what Frederick Barbarossa, Richard Cœur de Lion, and Philip Augustus had with dire loss and bloodshed striven for in vain, and by establishing friendly relations with the Mohammedans of the Levant and the Barbary coast he restored to Europe the rich trade of the East. Yet neither of the votaries of these warring religions were satisfied. The Christians said Frederick had gained too little, the Mussulmans that Alkamil had granted too much. Jerusalem remained a frail and insecure possession in Christian hands for fifteen years, until in 1244 the Carismian Turks displaced from the shores of the Caspian by the Mongols swept over Asia Minor. The military orders were destroyed in one battle, Jerusalem was taken, the grown-up inhabitants slain, and the young men and children led into captivity.

In 1249 King Louis IX, generally called St. Louis, succeeded,



not without persuasion, in leading the chivalry of France and some noblemen from England into an invasion of Egypt. This expedition, called the seventh Crusade, though it might be called the tenth, ended in the King with all his nobles being made prisoners. They had to pay a heavy ransom to be free.

The impulse to new Crusades was evidently losing its force. There were signs that better days were coming, yet the feudal lords still made the lives of the people miserable with their oppressions, and the clergy made the future terrible with their threats of an inferno in describing which Dante displayed his vivid and cruel imagination. The misery, insecurity, and oppression of the times were manifested in brain excitement and motor restlessness; but people showed a receptivity to other forms of excitement than the blind rush to Jerusalem.

During the captivity of King Louis an unfrocked Cistercian gave out that he had received a commission from the Virgin to preach a Crusade to the poor and humble. His followers were called Pastoureaux, or shepherds. The ferment spread, so that in a short time he gathered together a multitude said to amount to about one hundred thousand, moving along in company with a banner bearing a cross and a lamb. "He assumed a priestly character, preaching, absolving, annulling marriages. At Amiens, Bourges, and Paris itself he was received as a Divine prophet."<sup>(12)</sup> The Queen Blanche, who was regent, at first tolerated the religious movement. The new prophet declaimed loudly against the idleness and greed of the clergy, and his followers began to lay violent hands on the priests and to plunder the monasteries, on which the governing classes turned against them, slew many, and dispersed the rest. A similar insurrection broke out seventy years after, which was distinguished by a massacre of the Jews.

Other examples of these epidemics of religious lunacy in the Middle Ages are furnished by the Flagellants in Italy, Germany, and Poland, the Bianchi in Italy, and the dancing mania which broke out at Erfurt in 1237, at Utrecht in 1278, and at Aix-la-Chapelle in 1374. These nervous maladies, propagated on the wings of thought, convulsing the mind by exciting the senses, have been described by Hecker in his learned work on *The Mental Epidemics of the Middle Ages*.

For the thirteenth century Christendom had its own wars to engage its attention: the popes were more anxious to prose-

cute their feuds with the house of Hohenstaufen than to succour the Eastern Christians now separated from the Latin Church ; the Venetians and Genoese were at war for the trade of the East.

On the other hand, the zeal of the Mohammedans was in no way abated. Bibars, the Sultan of Egypt, vigorous, untiring and unrelenting, took it for his life work to expel the Christians from Syria. He stormed the castles of the Templars and Hospitallers, who disdained to help one another. In 1267 he took Antioch, which had been for a hundred and seventy years in Christian hands. The men were cruelly put to the sword, and the women and children sold as slaves.

The report of these disasters stirred Louis to a new Crusade, directed against Tunis, in which the King died of the plague, leaving a warning to his people against further foolhardy enterprises and gaining from the Church the honours of sainthood.

In 1271 a new Crusade was started by Prince Edward of England, afterwards Edward I. With 300 English knights and 500 Crusaders from Friesland added to the Templars and Hospitallers, he formed an army of 6,000 men. Marching upon Nazareth, he caused all the Mussulman inhabitants to be slaughtered. The Sultan Bibars advanced to meet him, when the English prince retreated within the walls of Acre. After having made a narrow escape from the dagger of an assassin, on a truce being concluded, he left for England in 1272.

As the times became more enlightened the clergy found an increasing difficulty in stirring on men fated to destruction to new Crusades. People began to question whether these disastrous expeditions were really a duty enjoined by the Christian religion. We can only wonder at the slowness of their doubts, the obstinate perseverance of Europe, "that no instruction should have been drawn from constant and adverse experience, that the same confidence should have repeatedly grown from the same failures, that six succeeding generations should have rushed headlong down the precipice that was open before them, and that men of every condition should have staked their public and private fortunes on the desperate adventure of possessing or recovering a tombstone two thousand miles from their country" (Gibbon).

The taking of Acre by the Mohammedans in 1290 closed the struggle for supremacy in Asia between Christianity and Islam, which had lasted for well nigh two hundred years and cost the lives of millions of men.

During the Crusades hostilities were carried on with shocking inhumanity. War between the different States of modern Europe and America has been refined into a series of combats between regular soldiers, wearing a distinctive uniform, who direct missiles against one another at such a distance that the enemy can scarcely be descried. Even while the work of destruction is going on surgeons are employed to traverse the field and attend the wounded, often caring for both parties alike. Prisoners are subject to no further hardship than being detained till peace is declared; but when European troops meet adversaries of different civilisation and colour hostility assumes a harsher spirit. We know what savage reprisals were made by our troops during the Indian Mutiny. Unquestionably the provocation was great; but the continuation of unsparing massacres and wholesale executions after the first grief caused by the treachery of the Sepoys make us see that the fury of the Crusaders may still be traced in their descendants. The Crusaders had been taught by many senseless stories to regard the Mussulmans as something more hateful than wild beasts; their foreign dress, their dark complexion, their strange language, and their rival religion heightened the abhorrence with which the pilgrims had been taught to regard them.

Let us take two instances of the savage hatred of the combatants. After the capture of Antioch Raimond d'Aigles records an incident, which, as he observes, "was for us very agreeable and truly delicious." Some Turks seeking to escape amongst the hills to the north had their retreat cut off and were turned again to flight with such impetuosity that they dashed over the precipices. "It was," Raimond goes on, "a true joy for us to see them thus fall; but we had to regret the loss of 300 horses which perished at the same time." Geoffrey de Vinsauf, in his *Itinerary of Richard I*, tells us that the King resolved that the hostages, whose ransom Saladin was slow in paying, should all be hanged, except a few nobles who might ransom themselves or be exchanged for Christian captives. "King Richard, anxious to destroy the

Turks root and branch, and to punish their wanton arrogance, as well as to abolish the law of Mohammed, and to vindicate the Christian religion, on the Friday after the assumption of the blessed Virgin Mary, ordered 2700 of the Turkish hostages to be led forth from the city and hanged. His soldiers marched forward with delight to fulfil his commands."

It now and then happened during the Middle Ages that the prelates of the Church tried to reconcile hostile princes and to abate the fury of war amongst the Christians, but in this struggle it was the clergy who kept up the crusading spirit and increased the animosity of the combatants. The Bishop of Puy, the Pope's legate at the siege of Antioch, advised that they should cut off the heads of the Saracens and sticking them upon lances, expose them to the defenders of the ramparts.

The abbot Guibert Nogent gives a story which throws a curious light upon the military surgery of the times. Baldwin, the brother of Godfrey and the second King of Jerusalem, had received a severe wound in trying to save one of his soldiers. The surgeon who attended, seeing that the wound in the abdomen was a deep one, was afraid to endeavour to close the outer edges by plasters, fearing an internal abscess. To relieve his uncertainty he asked the Prince that one of the Saracen prisoners should be delivered up to him upon whom he might inflict a similar wound, for, the Abbot remarks, to propose such an experiment upon a Christian would be a crime. The surgeon desired to kill the prisoner after having given him the wound, in order that by opening his body he might at ease compare it with the injury which the King had received. Baldwin, however, declared that he would never consent to cause the death of any man, even of the most odious race, merely to seek through so many uncertainties to save another life. The persevering vivisector then requested the French Prince to have a bear given to him whom he could hang up by the forepaws and then give the beast a similar wound in the abdomen which he might compare with that of his royal patient. The experiment was made and the surgeon came to the conclusion that it would be dangerous to try to close up the lips of the wounds at once. No doubt he received the thanks of the King for his scientific treatment.

This took place six hundred years ago, yet only the other day it was announced that as the results obtained by experi-



ments in animals are so uncertain as to be virtually worthless, it has been proposed to the Ohio legislature that it should be made legal to practise vivisections on criminals condemned to death!

It has been wisely observed by Emilio Castelar that "those who look upon life from one side, upon time from one age, the doctrines of one religion only, humanity from one people, will never understand the human mind." So let us try to realise the feelings and thoughts of the Mohammedans when the sudden inundation from the West burst upon their territory. The bravery with which they defended their country gained for the Turks the unwilling admiration of the Crusaders. "What brave men! how skilful in war! if they were only Christians!" It was fortunate for the Crusaders when the first army of the Franks entered Phrygia that the power of the Seljuks was greatly broken. Asia Minor was divided amongst emirs warring against one another, and the Sultan of Egypt even coveted the alliance of the Christians against the Turks. The Armenians were awaiting the coming of the Crusaders as their deliverers. After the taking of Antioch and the defeat of Kerbogha the towns on the march through Palestine submissively gave provisions to the invaders, but the massacre of the inhabitants of the Holy City caused a burst of indignation through the whole of the Mohammedan world. As an Arab chronicler wrote, "the tidings of that terrible catastrophe reached Bagdad in the month of the Ramadan, consecrated to fasting and austere penitence. The couriers who brought the dreadful news implored the assistance of the Caliph and his Emir in the most touching terms. The inhabitants of the capital insisted on a speedy succour, shed tears without ceasing, and ran about the streets uttering cries of lamentation." The Sultan of Egypt promptly marched upon Jerusalem, but was defeated by Godfrey and his army destroyed. Had he waited a few months, till the bulk of the Crusaders had left for Europe, he might have been more successful. At any rate, his overthrow struck terror amongst the Mussulman population from Cairo to Samarkand.

Bohemund ruled at Antioch, and Baldwin, the brother of Godfrey, the King of Jerusalem, gained the principality of Edessa across the northern Euphrates; but when the petty States of Syria and Anatolia were united under the vigorous

rule of Zenki, Neureddin, and Saladin the fortune of war favoured the Crescent. In the history of the Crusades there is no more striking figure than Saladin ; his valour, his generalship, his magnanimity, his generosity to the vanquished, made him famous over the East and the West. Dante puts him in the limbo of his *Inferno* in the same circle as the sages of antiquity.

There was more religious toleration in the domains of Islam than in western Europe. About seventy years before the first Crusade Mahmud of Ghazni, who sought to extend the faith into India, went no further than plundering the Hindu temples and breaking the idols. There is no record that he put any Hindu to death save in battle or in storming a fort. It was even said that he questioned the Divine message of the Arabian prophet, and that he professed doubts of a future state. A vein of scepticism had accompanied the military conquests of Islam, and descended even to the fourth century of the Hegira. There were a number of sects in Asia Minor and in Persia, some of which altered, others rejected, the Mussulman faith. Certainly Omar Khayyám, the astronomer poet of Persia, who lived at the time of the first Crusade (dying in 1123) would have been burned by the Inquisition had he dared in Europe to commit to writing those materialistic verses which in an English dress are now so much admired.

Some writers of history have allowed much influence to the intercourse of the Crusaders with the higher culture and civilisation of the Mussulmans ; but the bitterness of the prolonged struggle for the possession of the Holy Land was a powerful cause of alienation. The course of trade for the products of the East, however restricted, would have much better helped the exchange of thought. It was through Spain, not from Palestine, that Arabian philosophy entered Europe. For two centuries the Arabs had cultivated the science of the Greeks ; it seemed as if Islam were capable of allowing sufficient liberty for a rational philosophy. It was by translations from the Arabic that the philosophy of Aristotle taught in the schools of Cordova passed to the universities of Europe. But with Averroes Arabian science came to an end (A.D. 1198).

Rather a commentator than an original thinker, his name was denounced by the Church as the leader of the free thought. Although the triumph of the Catholic faith in Europe seemed

to be absolute, there were still some philosophers who cautiously confided their rationalism or their unbelief to one another.

There is no surer way to stiffen men in their belief than to get them to fight about their cause. The fierce manners of the Crusaders and the massacres of Antioch and Jerusalem were told in every mosque, and were the burden of grief and ire amongst the Mecca pilgrims. Volunteers came from all parts of the domain of Islam to combat the Christian invaders. The Catholic priests represented the Mussulmans as idolaters; but the rigid monotheism of the Mussulman was offended by the doctrine of the Trinity, the worship of the Virgin Mary, the miraculous part assigned to the saints, and the idolatrous reverence paid to the holy cross and the images and statues in the churches. And so the followers of the prophet clung closer to his revelation. It was in the twelfth century, the age of the Crusades, that, as Renan tells us, "Islamism triumphed over the undisciplined elements which raged in her bosom, and this by the advent of the Ascharite theology more severe in its conduct and by the violent extermination of philosophy. Since that age never has a doubt been produced nor a protestation raised in the Mussulman world."

From what I have seen, heard, and read of the Mohammedans of our day I believe that free thinkers are rarer amongst the Mussulmans than amongst the followers of any other religion.

(<sup>1</sup>) Guibert de Nogent, *Histoire des Croisades*, Liv. iv, p. 148. *Jacques de Vitry*, Liv. 11, chap. iv.—(<sup>2</sup>) *Alexiados*, Lib. x, Venetiis, 1729.—(<sup>3</sup>) Kugler, *Geschichte der Kreuzzüge*, Berlin, 1891, p. 19, treats Peter's dream as a legend, which gives a supernatural origin to the first Crusade. He quotes Anna Comnena to show that the hermit did not succeed in reaching the Church of the Holy Sepulchre. In the passage appealed to the Princess leaves it to be understood that Peter, after enduring many hardships from the Turks, had failed to attain his object, and fearing to go the same road alone, desired to take with him a powerful force which would insure his safety. For this somewhat insufficient motive Peter incited the Franks to make an armed pilgrimage to Jerusalem. But under the conditions there was nothing supernatural in Peter's dream. The story is related by several writers much more likely to be well informed than Anna Comnena, whose narrative is not free from errors. It is given by Albert d'Aix, a contemporary, and by Jacques de Vitry, nor is it contradicted by any Western writers who left histories of the Crusade.—(<sup>4</sup>) Peter was at the taking of Jerusalem. He returned to France in 1102 and founded the Abbey of Neufmontier, near Huy, in Flanders, where he died at an advanced age.—(<sup>5</sup>) See *Entwicklung und Untergang des Tempelherrenordens*, von Dr. (ph.) Hans Prutz, Berlin, 1888; *The History of France*, by M. Michelet, translated by G. H. Smith, pp. 312-330; Kugler's *Geschichte der Kreuzzüge*, Berlin, 1891, kap. xi.—(<sup>6</sup>) *Histoire de la Poesie Provençale*, par M. Fauriel, Paris, 1846, tome 11, p. 138.—(<sup>7</sup>) *Les Hospitaliers, en terre sainte et à Chypre*, 1110-1310, par. H. Delaville le Roulx, Paris, 1904, chap. ii.—(<sup>8</sup>)—*Vie de St. Bernard*, Livre Troisième, par. Geoffroi, Moine de Glairvaux, chap. iv.—(<sup>9</sup>) Renan *Averroes et Averroïsme*, Paris, 1866;

chap. ii, sec. xiv.—<sup>(11)</sup> Hallam's *State of Europe during the Middle Ages*, vol. iii, chap. ix, London, 1834.—<sup>(12)</sup> Michaud's *History of the Crusades*, translated by W. Robson, London, 1852, vol. iii, p. 57; *Die Kreuzzüge und die Kultur ihrer Zeit von Otto Henne am Rhyu*, Dritte Auflage, Leipzig, 1903, p. 510.

*Recidivism regarded from the Environmental and Psycho-pathological Standpoints.* By J. F. SUTHERLAND, M.D., F.R.S.E., Deputy Commissioner in Lunacy for Scotland.

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*Introduction.*

RECIDIVISM is the French coined term most appropriate to express the persistent, reiterated lapses of the same individual, in that small section of habituels found in every country, both



among criminals engaged in serious crimes against the person and property, and among petty offenders, whose delinquencies or misdemeanours are drunkenness, public disorder, prostitution, and vagrancy. The former are aggressive, noxious, anti-social, and, to a slight extent, industrious and productive; the latter, as a rule, are passive, idle, debauched, parasitic, and unproductive. The two types are quite distinct, and there is little or no intermingling; that is to say, the recidivist engaging in the major crimes in the criminal calendar does not forsake the ranks of that class to become a recruit in the ranks of the minor and petty offender class, and *vice-versâ*.

Whatever the causes of its existence and vitality, within or without the individual, recidivists of both types live, move, and have their being, in spite of, and in antagonism to, the laws made by society, for the protection of the person and property of the individual, and of the commonwealth as a whole.

The laws of progressive countries are, fortunately, not like those of the Medes and Persians—unchangeable—and therefore liable to be broken suddenly. And thus it comes about that persons who, in one age and generation, were denounced, subjected to every humiliation, and confined as felons, in another were hailed as heroes, martyrs, and altruists, and that those who to-day, in exalted stations under the ægis of the law, are carrying on, in the name of *haute finance*, etc., with the aid of wealth, gigantic frauds against the weak and trusting members of society, may to-morrow find themselves carrying on their schemes under laws calculated to check this refined and subtle development of that human, or rather, inhuman, acquisitiveness and avarice, which, like a demon, spreads its dusky wings over mankind, and enveloped in the legal mesh, just as surely as the vulgar thief is now.

Recidivism cannot but have for psychologists and alienists a special interest. The propositions put forward by the Italian school of Criminal Anthropology, with Lombroso at its head, quickened that interest for some years, as well as criticism, often unmeasured, until that inevitable reaction set in, which, as a rule, happens when extreme claims, based on slender data, are put forward, and cannot, upon further investigation, be maintained. What applied to, and might be true of, a few, was claimed as covering the many. Absolute certainty in methods of observation and of results was claimed, when these, in the

most favourable light, could only be considered of relative and uncertain value.

For some reason or other the problem of recidivism has all but eluded the grasp of legislators, jurists, sociologists, penologists, and psychologists, only indifferent success, up till now, attending their separate and combined efforts, and what little success could be shown followed experiment after experiment, made in a haphazard way, without any real guiding principle. The beneficial changes, slowly and constantly evolving in wisely-governed communities, which have arrested the growth of recidivism, or prevented that growth beyond the growth which could only be justified by the increment of population—the latter not much to boast of—have taken place by an adjustment of the laws referable to land and property more in harmony with the views of the many. The government of the people by the people, and not by the few, has brought about a better state of society, better laws, better conditions of living and labour, a fairer distribution of the wealth accruing from labour, the extension of liberty, the spread of education, and equal opportunities for all to rise in the social scale ; and, last of all, a better understanding of penological principles. Under favourable conditions, such as these, it will be possible to discover the large number of reformable recidivists at present in a rebellious mood. A residuum will always remain requiring to be suitably dealt with, and treated as pathological entities of various types and degrees. It is coming to be recognised in Great Britain, the United States, and on the Continent—and this is the view of the writer—that in the study of habitual criminals much may be done for them, and through them, for society, on the following lines : *first* in importance, by a study of the post-natal environment in its numerous and far-reaching aspects from childhood to adolescence ; *second*, by a study of heredity, including ante-natal environment, which might reveal degeneracy, mental and physical defects of such a nature as to make the proper exercise of the will in conduct and duty a very doubtful one ; and *third*, by means of criminal anthropometry, in order to view him in contrast with the entire population, and with the classes from which the different type of recidivists chiefly come.

The central and local administrative authorities throughout the country have, at different times and in various directions, at great cost, attempted to combat and solve this problem,

hitherto baffling and insoluble, by experiments of a juridical, penological, and social nature, but the criminal, irrepressible Frankenstein rearing its hydra-head, and stalking through the land with limbs of brass, as well as the weak-minded and obsessed petty delinquent recidivist, remain with us. But the psycho-pathological and environmental lines of inquiry, especially the former, have yet to be tried in earnest by competent investigators.

It is becoming abundantly clear that the line of investigation in the future which promises to all nations good results is that which recognises the two principal causes of criminality, the sociological one *external* to the recidivist—namely, environment, and the economic conditions bringing it about and perpetuating it, the other *internal* and hereditary—to be estimated by the psychological and the psycho-pathological method. With some knowledge of recidivists gained in a wide field of observation, and likewise of the penal system of this and other countries which prevailed for a time and passed away, this is the confident belief of the writer. Racial differences are not of much moment, except in regard to the drink habit so prevalent among the Celtic, Teutonic, and Slavonic peoples in Northern France, the United States, Northern Germany, Russia, Denmark, Sweden, Belgium, the Netherlands, and Great Britain and Ireland, and the habit of carrying lethal weapons practised by the Celtiberian peoples of Spain, Portugal, the Balkan States, Italy, and along the littoral of the Mediterranean.

*Statistics of Crime and Petty Offences in Scotland and England  
for 1903.*

It has been the custom of not a few who speak and write with some authority on criminal matters to decry the presentation of vast masses of figures as not only puzzling, but of little value. The puzzling nature of them to many is admitted, but not the lack of value. National, as well as international, statistics have a relative, if not an absolute, value, even when the methods of compilation and classification of crimes are neither uniform, nor the best, nor, indeed, what one would expect them to be. Before a nation attempts to grapple by newer methods—or, indeed, by any method—with the problem of crimes and minor offences in their various noxious and per-

sistent forms—it very properly demands that a rough estimate should be made of habitual criminals and delinquents who have failed to benefit by past methods. If any investigation of masses of figures revealed, on analysis, only a few recidivists—whether felons of the *hostes humani generis* type, or delinquents of the drunkard, vagrant, tramp class—then it may safely be assumed that society, sociologists, and penologists would not trouble much about *une quantité négligeable*, but would be inclined to allow them to fulfil speedily their destiny in their own way, thereby giving testimony to a full belief in the doctrine of the survival of the fittest. Some would revert to Sparta's methods. But the humanitarian, the political, judicial, and penal reformer, and the psychological observer have to be reckoned with in every civilised land, and the question which cannot thus be disposed of is not allowed to rest or slumber. Like the problem of poverty and the unemployed, while the aggregate is small, not much is heard of either, but let it grow in dimensions and obtrude itself on a nation's notice, then legislators make an effort to ascertain the causes and to remove them.

Two statistical tables (I and II), with graphic representations (*cercles concentriques*) of each class of crimes and minor offences (misdemeanours) in Scotland and England for 1903, are submitted.

*Scotland.*—The total apprehensions in Column 1, namely, 166,180, or 1 to 27 of the population, have at first sight an alarmist look, and would suggest that things—social and ethical—are not well either in Scotland or England, in which the liberty of the subject secured under many Magna Chartas is the palladium of the people. But this immense total, it should be borne in mind, only furnishes 36,710 individual prisoners. It will be observed that the totals in the five different columns steadily diminish until the noxious, aggressive, and anti-social recidivists in Class 1 number approximately 1700, or 1 to 2690 of the population, and the parasitic and passive recidivist in Class 2 (*a*), 3000, or 1 to 1500, every one of whom, unlike the worst type of recidivist who escapes justice three out of four times, are accounted for by the police.

Both kinds number 4700, or 1 to 1000 of the population. 0·38 per 1000 of the population waging an aggressive war against society does not look bad, although the annual cost of



the 1700 for maintenance, supervision, and the machinery of the law, in addition to the loss to the nation when they are at liberty, falls little short of a million sterling annually !

Among the 4700 recidivists there are, from calculations I made in 1895, 2500 who are weakminded and mentally unstable. That would mean '5 per 1000 of population—a ratio somewhat similar to that given for England some years later by Mr. C. S. Loch, C.B.

The recidivists in Scotland, it is true, do not increase beyond

### SCOTLAND, 1903.

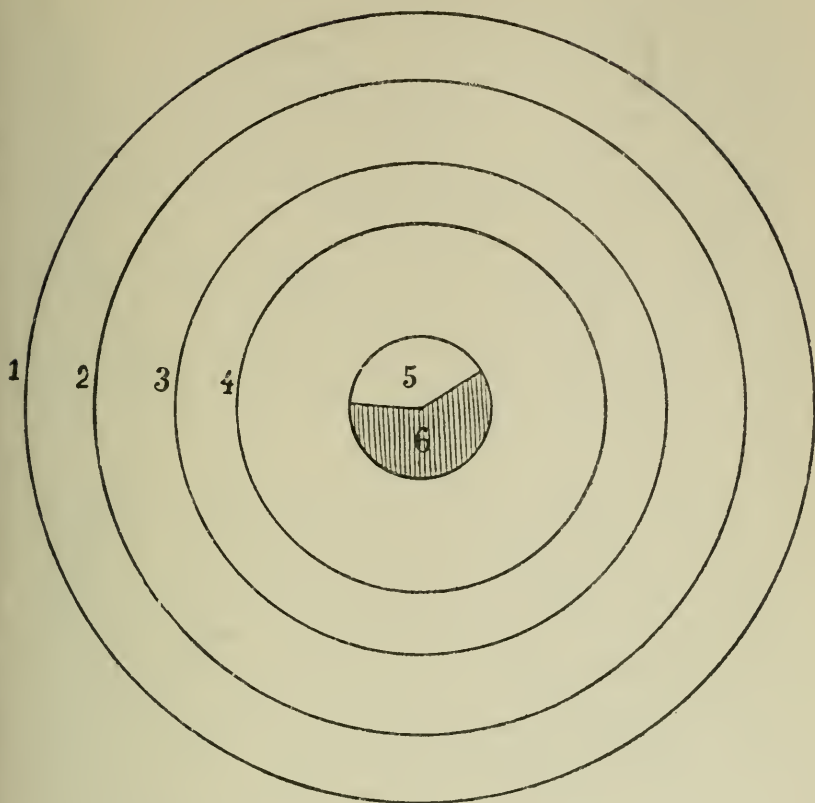
*Population, 4,580,000. Apprehensions and Prosecutions for Crimes, 25,680 ; for Offences, 140,500. Total, 166,180.*

	Sex-ratio.	Crimes known to police.	1. Apprehensions.	2. Convictions.	3. Imprisonments.	4. Number of Individuals imprisoned.	5. Number of recidivists free and unconfined.
<i>Class I.—Crimes.</i>							
A. Homicides,* grave assaults, cruelty to children	11 to 1	4,590	4,762	3,975	1,976	—	—
B. Rape, unnatural sexual crimes, libidinous practices	—	362	310	—	233	—	—
C. Malicious injury to property †	14 to 1	4,221	4,627	3,627	—	—	—
D. Crimes against property with violence, robbery, housebreaking, burglary	16 to 1	4,736	1,568	1,282	1,219	—	—
E. Crimes against property without violence, theft, reset, fraud, forgery, etc.	3 to 1	21,152	13,834	10,928	6,498	—	—
F. Other crimes.	2 to 1	—	473	—	—	—	—
Total of Class I.	5 to 1	—	25,574	20,329	10,921	8,340	(b) 1,700
<i>Class II.—Petty Offences.</i>							
A. Breach of peace and drunkenness	3 to 1	—	95,681	70,096	36,108	—	2,000
B. Prostitution	—	—	2,886	2,714	2,006	—	—
C. Vagrancy, begging	75 to 1	—	4,037	3,757	2,561	—	1,000
D. Other petty offences	6 to 1	—	38,002	38,200	8,220	—	—
Total of Class II	3 to 1	—	140,606	92,166	48,956	29,370	(a) 3,000
Grand total of I and II	3·5 to 1	—	166,180	112,700	60,076	37,710	4,700

\* Homicides apprehended, 62.

† Arson (fire-raising), 38 ; known to police, 54.

FIG. 1.



1. From circumference to centre = apprehensions.
2. " " " = convictions.
3. " " " = imprisonments.
4. " " " = number of individuals imprisoned
5. Habitual criminal recidivists.
6. Habitual petty offender recidivists.

the figure justified by growth of population, and that is not much to boast of; neither do they diminish. The gaps made in their ranks by the ravages of debauchery, disease, and premature death, and by the wearing down of prolonged, penal sequestration are soon filled up, and will continue to be filled up so long as that pernicious moral environment possible in the slums of cities and towns is allowed to continue. It will be noted that all those coming under the cognisance of the police are divided into *two* classes: the authors of crimes, and the authors of petty offences (misdemeanours), the apprehensions of the former

numbering 25,570, being 15 *per cent.* of all crimes and offences, and 1 to 180 of the population, of the latter 140,600, being 85 *per cent.*, and 1 to 39 of the population. Of the 25,570 apprehended in Class 1, 20,330 are convicted after trial on indictment, and 10,920, representing 8340 individuals, or 1 to 550 of the population, go to gaol; and among those and their comrades at large are to be found 1700 noxious and hitherto incorrigible recidivists. In the case of larceny (thefts), reset, fraud, and forgery, the sex ratio is 3 to 1, not a few women and girls in the latter class being degenerate and weak-minded, pilfering, both when sober and partially under the influence of alcohol, when they become reckless and unconcerned. The sense of shame and remorse is a *minus* quantity. No less than 25 *per cent.* of the authors of crimes in this category escape apprehension, "slimness" and cunning being exercised by the smart ones.

In regard to crimes of blood and violence, murder, culpable homicide, assaults on wives, cruelty to children, etc., the authors betray a coarse, callous, and cruel nature, but not, except in rare instances, calculation or deliberation in their execution. Speaking for Scotland, the mental attributes of hatred, malice, and revenge in evidence in this class of crime suggested by the foregoing sentence requires modification, for it is within the mark to say that 70 *per cent.* of such crimes are committed by persons more or less in a state of alcoholic intoxication, and therefore more or less irresponsible, or by persons degraded by chronic alcoholism.

Jurists working upon precedents and judicial dicta generations, if not centuries old, declare that intoxication, which, in the view of the writer is temporary insanity pure and simple, is no excuse for the gravest of all crimes—homicide. There can be no freedom of will in such a state. Others, again, having better conceptions of what the intoxicated state means in relation to crime and responsibility, advocate that at least he should be punished and sequestered, if not for the resultant crime, for imbibing too freely of a toxic agent, which he knew, or ought to know, in himself, and by its action upon others, would deprive him of inhibition, and of clear judgment as to conduct. There is something, indeed, much, to be said for this view in any rational system of jurisprudence. But even here the question is begged so far as chronic drunkards are

concerned, and it has yet to be determined by alienists in what cases the alcoholic habit is a vice, and in what cases an evidence of a neurasthenic or defective organisation, or the outcome of a pathological state, both of mind and body, induced by long indulgence to excess. In many of the latter class no doubt there was a stage in the life of the drinker when responsibility might be assumed, but it is by no means an easy task for the alienist or physician to fix the stage when responsibility ceased and irresponsibility began. For some murders committed in passion or frenzy to avenge a wrong—real or imaginary—it is possible to plead justification and extenuation; but for the foul, cold-blooded, deliberate homicides of notorious criminals and prisoners, who, for lust or gain, have put out of existence wives, helpless children, and others, no shadow of an excuse can be offered, in view of the fact that without resorting to such extremes the former passion could be gratified to the full sexual pitch, and the latter realised with the risk of loss of liberty to himself rather than the loss of life to another. And the term “instinctive criminal” should not be set up as a shield to protect such inhuman monsters from the justice, not the *lex talionis*, of laws, both divine and human. For such elimination or perpetual sequestration is called for in the interests of society. Such criminals—moral monsters if you like—are not one in a million, and fortunately, being so rare, it is indefensible to erect them into a class and write as if they were in evidence on all sides, and a standing menace to life and property.

The number of recidivists in this class of law-breakers is few. It could not be otherwise, seeing their acts of violence are the outcome of passion, hatred, and malice gratified with, or without, the aid of an intoxicant, and in their graver forms are seldom repeated, punishment having a salutary effect.

With regard to the perpetrators of crimes against chastity, *viz.*, rape, incest, unnatural crimes, etc., it has to be said that in no class of crime is the psycho-pathological element so apparent. Krafft-Ebing has for all time shown how many of these abnormal acts are due to sexual perversion and obsessions. The abnormality and unnaturalness of them all is self-evident to every unprejudiced physiological being. The numbers known to the police in the nature of things are few, and nearly all committed by males. But, for obvious reasons, all such crimes do not



come to light, and females take part in them, it is true, to a less extent, the sexual function being a less impelling one in them. Not only do these crimes, one and all, suggest to the normal individual a psycho-pathological and pathological side, but the repetition of them in spite of severe punishment confirms this view. The recidivists known to the police are few—fewer than they really are.

Of crimes entitled “Malicious Injury to Property,” arson is the most serious, and suggests obsession when deliberately done. Malice is at the root of it, and the male sex are mainly engaged in it. Recidivism is rare.

Coming to Class II—“Petty Offences” (misdemeanours)—no less than 140,600 apprehensions, being 85 *per cent.* of all crimes and offences, were made by an unnecessarily vigilant police, who seem to pounce automatically upon any staggering object on city streets.

The zeal and activity hitherto displayed by the guardians of public order is in this matter being somewhat curbed by the timely action of the Secretary of State. The ratio of such apprehensions is 1 to 33 of the population. Of this enormous total drunkenness and breach of the peace (95,680), prostitution (2,886), account for 98,567, or to 1 to 46 of the population. The great majority of the authors of these offences are in no sense criminal or recidivist, being males who get drunk on pay and *fête* days, work hard during the week, and maintain a home.

The phase of prostitution, which has for its votaries the *demi-monde*, is synonymous with drunkenness, dress, and indolence, these having, perhaps, as much, or more, to do with it than lust. The ranks of prostitution are not recruited, except to a very small extent, by the progeny; rather from those who up to adolescence have lived respectable lives upon small earnings. There is to be found among drunkards and prostitutes 2000 habituals, four fifths of whom are women—not many, considering the total apprehensions and the number of individuals (30,000) which they represent. But the 2000 are parasitic, lazy, debauched recidivists, for a proper estimate of whose moral and mental qualities, and of their future destiny, the psycho-pathological tape is required. They are, without a moral crutch, unable to guide and support themselves, and, like jetsam and flotsam, drift through society, not realising that they are social pests.

The great majority of petty offenders are (casuals) engaged in honest, often profitable, labour, the rewards of which are on occasions put to the worst use—to the detriment of themselves, their homes, dependents, and society. And such, getting into the hands of the authorities three or four times a year, cannot by any stretch of the imagination be reckoned “habitual drunkards” or recidivists, requiring prolonged seclusion in some other place than an 800 cubic feet cell, in which twenty-three out of every twenty-four hours are, as a rule, spent.

In this class, also, are to be found the vagrant and beggar, and they are responsible for 4037 apprehensions—a total far short of the breaches of the vagrancy laws. A timid, superstitious, and hospitable public will lodge them in outhouses, and support them rather than report them to the police, and have them put behind bars and bolts, or in labour colonies, or workhouses. The brief term in gaol does no good to the nomad or “knight of the road.” Very different treatment is required. The ablution on reception is not considered a boon. On discharge they are again enveloped in filthy rags, and thus the cycle goes on. This class being migratory, and not long amenable to one jurisdiction, contributes few recidivists—fewer than they really are. They are in the proportion of eight males to one female. The hardships are too great for the latter sex, except for the hardest. In a legal sense the attachment of sex may be said not to exist, and, in any sense, the progeny is few, what there is being in infancy decimated by hardships, exposure, and disease. They manifest a conservative element, when, with the approach of winter, the majority seek for months the shelter of the workhouse, and with the advent of spring resume the lines of march. Others seek out the “dosser” houses and night shelters of each town on the line of march.

For a proper understanding of many of the tribe of the wandering foot and weary breast, also, the psycho-pathological tape is required, and a different destiny than the gaol which society has erected for them and for other delinquents and *déséquilibrés* with mental warp, as a fortress of despair, not a house of hope. With truer conceptions of psychology, ethics, and social pathology there is no reason why in coming years the incorrigible, lazy tramp suffering from the *cacoethes ambulandi*, or what German writers designate “vagabund-wahnsinn,” whose mode of life is a puzzle to ordinary observers,

and to the officials of workhouses and night shelters, suggest to the normal man one of great discomfort, misery, and misdirected energy, because twenty miles of the road daily is not accomplished without loss of energy—perhaps having regard to the relative diets little less than is expended by the honest labourer in his eight hours' day—should not find his place in the ranks of the large army of mental degenerates, and thereby of lunacy. But a life of *ennui*, footsoreness, and an outhouse with or without a pallet of straw, or the side of a brick kiln, no more disturbs him than the embedded grime on his skin, and the pediculi and acari which thrive undisturbed on his body. The application of the æsthesiometer reveals that the sensory nerve endings are not responsive to the usual stimuli.

In England there were 36,800 apprehensions of tramps, making up a *corps d'armée* of ragged regiments roaming at large over the whole country, with a full knowledge of the roads and the shelters, and billeting themselves *volens nolens* on a hospitable or terrified public, who are thus largely responsible for the existence and continuance of this parasitic army, constantly on the move in singles or in couples.

There is no need, it is assumed, to make anything but a casual reference to that large mass of offences (38,000) against education acts, road acts, bye-laws and regulations of police acts, game laws, sanitary laws, etc. They are of little significance in a criminal or delinquent sense. They are bound to exist in all self-governing and progressive communities striving to attain to a more ideal and perfect state, when the humblest, poorest, and least intelligent in the community will be educated up to a full observance of such statutes.

*England.*—Having dealt at some considerable length with the delinquent statistics of Scotland, there is no call to write much about those of England. Whatever differences there are in the whole, and in sections, is not due to any racial difference, or to any difference in the laws governing serious crime—these being the same in both countries, and enforced with swift, unerring, and impartial certainty—but rather to a difference in the laws appertaining to petty offenders, and the method, or lack of method, of their application.

The grand total of apprehensions—745,000, or 1 to 44 of population—like the Scottish one, dissolves through convictions (1 to 104), imprisonments (1 to 146), and number of individuals

(1 to 200) engaged both in crimes and offences, to 167,900 individuals, of whom 33,000 recidivists, 13,000 of the noxious, anti-social recidivists of the burglarious, fraudulent, and larcenous type being in Class I (or 1 to 2500 of population), and 20,000 in Class II (or 1 to 1630 of the drunken, prostitute, and vagrant order), who are parasitic and passive, and only in small measure anti-social, if, under the present *régime*, they are to be allowed to live at all, and be at large when unoffending.

Both types of recidivist combined are in the proportion of 1 to 1000 of the population.

### ENGLAND, 1903.

*Population, 32,716,710. Apprehensions and Prosecutions for Crimes, 99,750; for Petty Offences, 635,225. Total, 734,975.*

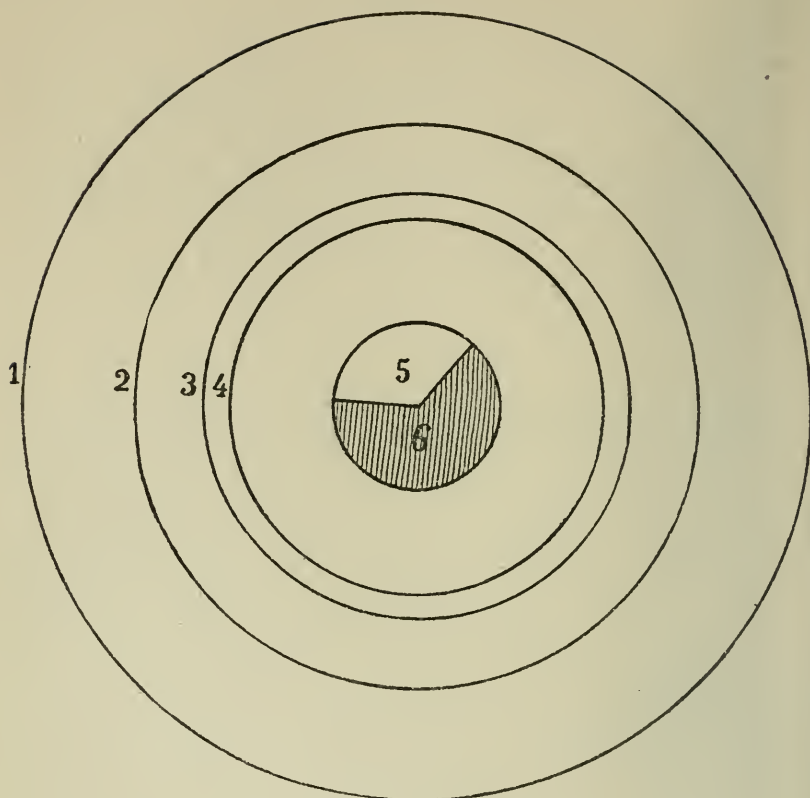
	Sex rates.	Crimes known to police.	1. Apprehensions.	2. Convictions.	3. Imprisonments.	4. Number of individuals imprisoned.	5. Number of recidivists free and unconfined.
<i>Class I.—Crimes.</i>							
A. Homicides,* grave assaults, cruelty to children	4·5 to 1	18,254	18,050	—	—	—	—
B. Rape, unnatural sexual crimes	—	1,401	1,391	—	—	—	—
C. Malicious injury to property†	8 to 1	16,176	16,073	—	—	—	—
D. Crimes against property with violence, robbery, housebreaking, burglary.	30 to 1	9,920	3,734	—	—	—	—
E. Crimes against property without violence, theft, reset, fraud, forgery	4·5 to 1	69,145	57,636	—	—	—	—
F. Other crimes	1·5 to 1	3,054	3,099	—	—	—	—
Total of Class I.	—	—	99,983	—	—	—	(b) 13,000
<i>Class II.—Petty offences.</i>							
A. Breach of peace and drunkenness	3 to 1	—	282,320	—	—	—	—
B. Prostitution	—	—	11,530	—	—	—	—
C. Vagrancy, begging, etc.	9 to 1	—	33,680	—	—	—	—
D. Other trivial offences	10 to 1	—	308,695	—	—	—	—
Total of Class II.	5 to 1	—	636,225	—	—	—	(a) 20,000
Grand total of I and II	5 to 1	—	736,208	314,060	223,910	167,900	33,000

\* Homicides, 388; made known to police, 436.

† Arson (fire-raising), 213; made known to police, 272.



FIG. 2.



1. From circumference to centre = apprehensions.
2. " " " = convictions.
3. " " " = imprisonments.
4. " " " = number of individuals imprisoned.
5. Habitual criminal (recidivists).
6. Habitual petty offenders.

Of the 745,400, there were apprehended, for homicides, assaults, wounding, sexual crimes, crimes against property, *with* or *without* violence, 99,980, or 13·4 *per cent.* of the whole, and 1 to 327 of the population. Crimes against property totalled 61,370, being 61 *per cent.* of all serious crime, and equivalent to 1 to 533 of the population. Sexual crimes amount to 1·4 *per cent.* of grave crime.

The petty offences (not the offenders) in Class II number 635,225, or 85 *per cent.* of all crimes and offences, and are in the proportion of 1 to 51 of the population. Of those in this

class calling for notice it has to be observed that drunkenness, disorder, prostitution, vagrancy, and begging account for 327,530, the apprehensions for the first there being 293,850, or 1 to 111 of population, and the fourth 33,680, or 1 to 1000 (*circa*).

The other petty offences, numbering 308,695, or nearly 50 *per cent.* of all minor offences, are no evidence, either in their numbers or in their nature, of delinquent tendencies, but rather the measure of imperfection of a large section of society not educated to, or not in a position to adapt themselves to, a variety of recent laws, passed with the object of attaining to a more perfect social and civil state.

To a proper understanding both of criminals and offenders, and especially the *habitués* among them, certain civil and social conditions require to be stated, and among these obviously are sex, age, and usual place of abode, housing, training in childhood and youth, education, occupation, civil condition, single or married, widower or widow, living in family or separated, and the probable cause, habits, and frequency of conviction. All these are embraced in the great environmental factor *external* to the criminal, to be discussed later, alongside of other factors in criminality *inherent* in the criminal himself, and evidenced by a physical and mental make-up of such a kind as to suggest that judgment as to a true sense of right and wrong is so warped, that freedom of will to choose between right and wrong does not, in many instances, in reality exist. The presence of congenital mental defect or mental warp, it may be of small degree, is often sufficient to make the acquisition of the most elementary knowledge all but impossible, and, if that be so, what is to be expected in regard to the moral sense?

### (1) *Sex and Age.*

In official statistics this alone of all the points is stated with that fulness which makes the figures valuable, and refers to crimes and offences *en masse*, and also in detail at certain well-defined and critical age periods in life. In this way the proneness of sex to different crimes and offences at certain age periods is made known, and it is significant, from the sex point of view, that in regard to crimes of blood and violence, sexual crimes, crimes against property *with* violence, and the offence

of vagrancy, females play a small part. On the other hand, for crimes against property *without* violence, and for the minor offences of drunkenness, breach of the peace, and prostitution, they are strongly in evidence. In Scotland and England, for these important age periods, the relative percentage of crimes and offences was in 1903 as follows :

*Percentage of Criminals and Petty Offenders of Both Sexes at certain Age Periods.*

	Scotland.			England.		
	Under 16.	16-21 years.	50 years and over.	Under 16.	16-21 years.	50 years and over.
<i>Crimes.</i>						
Homicides, assaults . . . . .	0·2	1·8	10·6	0·7	10·8	10
Rape, unnatural crimes, etc. . . . .	2·5	25	12	4	21	14
Crimes against property, with violence . . . . .	20	30	1·6	2	28	5
Crimes against property, without violence . . . . .	27	17	7	18	19	7·4
<i>Petty offences.</i>						
Drunkenness, breach of peace . . . . .	1·2	10	12·4	—	—	—
Prostitution, etc. . . . .	—	—	—	—	—	—
Vagrancy . . . . .	2·4	9·5	22·2	—	—	—

Instructive also are the following figures for England, as to the relative proportion of the sexes at all age periods :

England.	Under 12.	Under 16.	16-21 years.	21-30 years.	30-40 years.	40-50 years.	50-60 years.	Above 60.	All ages.
Indictable crimes against property without violence, theft, reset, fraud, etc. . . . .	—	100·17	100·8	100·11	100·14	100·20	100·20	—	100·12
Larcenies and petty thefts tried in courts of summary jurisdiction . . . . .	100·6	100·14	100·19	100·20	100·31	100·40	100·40	—	100·25

In Scotland the sex ratio at three well-defined age periods is as follows :

	Under 16 years.	16-21 years.	Above 20 years.
Crimes against property without violence	100'17	100'22	100'50
Petty offences of drunkenness, breach of peace, and prostitution	100'10	100'36	100'55

Sex ratio in relation to frequency of conviction or recidivism is a matter of some moment, and in Scotland is as follows :

Offences and crimes.	3 times.	4-10 times.	11-20 times.	21-50 times.	51-100 times.	101 and upwards.
(a) Drunkenness, breach of peace, and prostitution	100'50	100'70	100'7	100'90	100'180	100'330
(b) Crimes against property, with violence	—	100'6	100'2	100'27	—	—
(c) Crimes against property, without violence	—	100'26	100'40	100'50	100'130	—

It is strikingly borne out by this last set of figures that as frequency of conviction advances, the female sex advance with it, until ultimately it exceeds the male sex in a remarkable manner.

It is significant that in England, of those convicted of indictable crimes, 18'5 *per cent.* were under sixteen years of age ; at one time it was higher, but a judicious use of reformatory and industrial schools, and of the lash (birch) in lieu of the prison, has reduced the number. It is still, it will be admitted, a high figure, and one calling for searching inquiry in order to determine how far it is due to their organisation and how far to the lack of opportunity for doing good, and to the lack of education, training, and a trade. These juvenile felons and delinquents have not attained adolescence, and the inhibitory power of the brain has not been properly developed.

### *Education.*

In England, of 188,678 persons imprisoned, 19 *per cent.* could neither read nor write (a fact at the first glance not credit-



able to a country with the freest institutions, and in the enjoyment of free and compulsory elementary education); 78 *per cent.* could "read and write imperfectly," 24 *per cent.* "could read and write well," and "0.08 had a superior education." These startling figures would seem to justify Victor Hugo's estimate of the part illiteracy plays in crime. But any deduction from those figures must be qualified by the statement that a great many, from mental incapacity and weak-mindedness from birth and in early life, were incapable of receiving that elementary instruction which would raise them in the social scale above the lower labouring classes. Not a few who do possess sufficient mental capacity are in this position from parental neglect and bad upbringing. These percentages, it should be explained, are given for all sorts and conditions of prisoners *en masse*. It would be much more helpful to those on the outlook for preventive measures if the state of education was given for prisoners in each of the different classes of criminals and offenders, and likewise an estimate of their moral and mental capacity. It is well known, however, that crimes against the person show a lower level of intelligence than crimes against property. But the psychological and psychopathological tape, although of profound value, has hitherto not been applied. The scale of intelligence and capacity might profitably be arranged somewhat as follows:

(1) Mentally defective—the simplest facts understood, but an incapacity to perceive or reason about the relationship between facts.

(2) Slow, dull capacity for perceiving relationships between facts in limited fields with long and continuous effort.

(3) Slow, very slow in thought generally, but with time understanding is reached.

(4) Slow, intelligent, sure of knowledge when once acquired.

(5) Intelligent, capable of understanding with much effort.

(6) Very able.

This line of inquiry, conducted by competent psychologists, would settle why illiteracy, and a state not far removed from it, is so prevalent among criminals and offenders in England and Scotland.

#### *Occupation.*

To be of value, this, like education, should be given for

criminals and offenders in each class, and not *en masse* as is done at present. The state of education reached and ascertained practically decides what the vocation in life will be. In England, of 188,680 prisoners, 38 *per cent.* were styled "labourers," 25 *per cent.* "trades and handicrafts," 3·7 *per cent.* "prostitutes," and 1·8 *per cent.* "domestic servants." And of the occupations of 268 convicts in Scotland in 1905, 110, or 48 *per cent.*, had former sentences of penal servitude, that for "labourers" amounting to 56 *per cent.*, "handicrafts and trades," 30 *per cent.*; "professional," 2 *per cent.*; and miscellaneous, 11 *per cent.* Of the 268, 19 *per cent.* were guilty of homicides and grave assaults, 40 *per cent.* of housebreaking, burglary, and garotte robberies, 30 *per cent.* of theft, reset, and fraud, and 9 *per cent.* of rape and unnatural sexual crimes.

From a return prepared for me, with the authority of the Prison Commissioners, in 1905, of 370 male convicts and long term prisoners in Scotland, 199 of whom were convicted of housebreaking and burglary with violence, no less than 67 *per cent.* of the 199 were in the social scale "labourers" by occupation, or something very much akin to it, and 31 *per cent.* had learned handicrafts. The latter figure—a large one for this class—is not surprising, although disappointing, as among them there are to be found skilled workmen capable of earning more than a competency, or living wage, by honest industry. Of 110 convicted of theft, reset, fraud, etc., 47 *per cent.* were "labourers," and 41 *per cent.* "skilled workmen," and 6 *per cent.* professional men. Of 55 convicted of homicides and assaults, 54 *per cent.* were "labourers," and 27 *per cent.* "tradesmen," and of 14 convicted of sexual crimes, 80 *per cent.* belonged to the labouring classes, and 21 *per cent.* had acquired the ordinary trades. In all the four classes of crime 60 *per cent.* were of the labouring classes, and 33 *per cent.* had learned trades. Some trades yield a larger proportion than others, but unless one knew the number of each in the general population no good purpose would be served by further analysis. It is clear that the great majority committing the four kinds of crimes come from the labouring and least educated class, and that many of them are illiterate. It should not be forgotten that the "labouring" class form the largest section of the population. Between occupation and education, as between illiteracy and crimes and offences, there

is, however, a close intimacy. The obvious moral, in spite of Lombroso's contention to the contrary, is that ignorance is a danger to the State.

No information whatever is vouchsafed in judicial statistics, or blue books, as to the nature of the home (if any), the early training of criminals and offenders and their civil condition as to marriage, etc., as to habits, temperament, mental capacity, etc.—information absolutely essential to a right understanding and proper treatment of criminality and delinquency of the recidivist order. It is evident that our criminal statistics, to be of use and helpful to reformers, require re-casting.

*Interchange of Crimes, and of Crimes and Offences, and of Criminals and Offenders.*

The writer has been at some pains to find out how far this takes place, and the answer must be only to a slight and negligible extent. The types of felons engaging in the different crimes in Class I (Tables I and II) differ from each other in regard to the dominant mental characteristics—revenge, malice, lust, acquisitiveness, and avarice—governing each to such an extent that there is little or no interchange save between those who attack property *with* and *without* violence, in which it is considerable.

The large number of petty offenders (misdemeanants) in Class II commingle freely during the year and through life their offences of drunkenness, breach of peace, and prostitution, and, to a much less extent, vagrancy and begging. But few of them pass into the category of major criminals, and these few are the drunkards and riotous, whose frequent deeds of violence, disorder, and cruelty more often than not, by the merest accident, resulting in slight bodily injury to their victims, end in their being charged with homicide and indictable assaults. It could not be otherwise.

An intoxicated person, in a state of frenzy, is a constant and potential danger in a community. Reckless and unmeasured violence are the characteristics of the individual thus temporarily insane. Indeed, there is not, within the whole range of lunacy, a more complete picture of insanity than that presented by an intoxicated person, every sense being disordered.

Prostitutes frequently vary their mode of living and

offending with drunkenness, and less often with theft, their victims, as a rule, intoxicated or apparently so, being persons of the opposite sex. A minority of vagrants and tramps are apprehended for drunkenness, breach of peace, assaults, fire-raising, and malicious injury to property, but the great majority are comparatively harmless, homeless, aimless, wandering tramps and beggars.

(*To be continued.*)

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*Notes on the Management and Treatment of the Epileptic Insane, with a Special Reference to the NaCl-free (or "Hypo-chlorisation") Diet.* By G. FOSTER BARHAM, B.A., M.B., B.C.Cantab., Assistant Medical Officer, London County Asylum, Claybury.

IN the light of our present knowledge as to the causes of epilepsy, it almost might be said that, pending further discoveries, the last word has been spoken on the subject of its treatment; it is hoped, nevertheless, that some useful purpose may be served by recording a few observations on certain methods of treatment and their practical application under the conditions existing in a large asylum for the care of the insane.

In the treatment of epilepsy there are two well-recognised indications: (1) the diminution, or suppression, of the paroxysms; (2) the modification, or, so far as possible, the elimination of exciting causes.

Since Toulouse and Richet (1) published, in 1900, the encouraging results they obtained by combining a NaCl-free diet with the administration of bromides, many observers have recorded their experiences of this method, and the consensus of opinion is that it is of considerable value. The substitution of sodium bromide for sodium chloride in the preparation of food is not easily carried out in asylums where means for specialisation in the kitchens and bake-houses are not provided for. Moreover, the substitution for the ordinary mixed diet of a diet of milk and vegetables, as has been recommended by Zickelbach (2) and others, at once meets with administrative difficulties when dealing with large numbers of epileptic



patients. On the other hand, the simple substitution of sodium bromide for table salt can easily be carried out, and for the last eighteen months observations have been made in one of the epileptic wards at Claybury with the object of testing the effect of this procedure.

In the first place, all the patients in Ward K, which contains about fifty-five epileptics on an average out of sixty-two patients, were treated alike with the substituted salt. Many of the epileptic patients were at the time taking bromides, and had been doing so for a long time. At the end of about two weeks the effect produced was most marked—there was an appreciable diminution in the number of fits—but the most noticeable result was the extreme drowsiness of a large number of the patients, while nine epileptics and three of the non-epileptics were rendered quite incapable of dressing themselves or doing any of their usual occupations, some of them being unable to stand up, and one epileptic passed into a stuporose state, which lasted several days. All the patients had previously been free from these symptoms, and were, for the most part, capable ward helpers. Following on this, the doses of bromides given in medicinal form were gradually reduced, while observations on the number, severity, and character of the fits were made; at the same time, a few patients, including old and feeble cases and the non-epileptics, were provided with ordinary salt at separate tables.

An attempt was made by the writer to estimate the average amount of sodium bromide consumed by these patients. They only take salt at their midday meal, and almost invariably sprinkle their food all over with it, seldom placing any on the side of the plate. On several consecutive days a known weight of sodium bromide was placed in the cellars used by twenty patients, and at the end of the meal the remainder, together with that which could be gathered up from the plates, was weighed. By this means an average of 18 gr. was found to have been consumed. It may reasonably be assumed that the majority of these patients take 10, or more, gr. *per diem*, and that it seldom occurs that any one patient would like more than 20 gr. Toulouse allowed 3 grm. *per diem*—i.e., approximately, 46 gr.—but this was presumably not all consumed.

The results of this treatment are distinctly encouraging. In the majority of cases the paroxysms have been diminished

appreciably, both in number and in severity, and, on the whole, smaller doses of bromides in the form of medicine have been required. But the most satisfactory result has been a general improvement in the condition of this ward, where the patients are quieter, less irritable, and more capable to help and to carry on the work of the ward. Moreover, it appears that, whereas in certain aggravated cases with severe and frequent paroxysms the dose of bromide necessary for their control was liable to reduce the patient to a state of incapacity, with drowsiness and loss of appetite; under this treatment a more satisfactory result is obtained, the severity of the fits being lessened without any symptoms of bromism, though there is the same tendency towards the replacing of the attacks of *grand mal* by numerous attacks of *petit mal*—sometimes seen under the influence of bromides. The effect of this small amount of sodium bromide, given in the place of sodium chloride, is out of all proportion to its quantity (10 to 20 gr.) as compared with the large doses (3ij to 3iij or more) sometimes required to control the fits under the usual conditions; for the dose of bromides given in addition to the substituted salt varied from 10 to 40 gr. *per diem*, as much as 60 gr. being seldom required, while a few patients have been able to dispense with medicine altogether; moreover, the total result, which includes the better control of psychic disturbances and the lessened tendency to disorder, has proved, in the writer's experience, most satisfactory. It is therefore justifiable to say that this experience supports the contention that the withdrawal of sodium chloride renders the organism more susceptible to the bromides, so that smaller doses are efficient in preventing or controlling the fits.

The bromide treatment still maintains its position as the most potent remedy for idiopathic epilepsy. The potassium salt has been more widely used, but in the writer's experience the bromide of sodium and ammonium are almost equally efficacious, and are specially indicated where there is much depression. Féré (3) states that gastric disturbance is less liable to follow the use of strontium bromide; but this complication seldom occurs if due attention is given to the hygiene of the mouth and to the management of the diet and bowels, and this salt is stated to be more poisonous.

The addition of arsenic, with or without belladonna, unquestionably diminishes the liability to acne and other skin eruptions,

and the bromides seem to be better tolerated, especially in large doses, if given with either or both of these drugs.

The borax treatment recommended by Gowers has not proved successful, as a rule, in the experience of other observers. Féré (4) noticed some improvement in a few cases, but noticed a liability to gastro-intestinal disorders, eczema, and psoriasis.

Garnier and Cololian (5) observed no good results from its use. As an adjunct to the bromides it has been extensively used at Claybury, and a mixture containing

Potass. bromid. . . . .	gr. xx,
Sodi. biborat. . . . .	gr. x,
Liq. arsenical. . . . .	ʒij,
Syr. rhœados. . . . .	ʒss,
Aqua ad . . . . .	ʒj,

has been in use for a long time, but when the borax was omitted in one ward the result remained about the same. The writer has not observed any benefit from a trial of the various coal-tar products, either alone or combined with bromides. Digitalis as a diuretic and cardiac tonic has a very special value in some cases. No benefit has been found in the oxide of zinc, which was tried in several cases with frequent attacks of *petit mal*.

Of patent medicines "Bromocarpine"—a combination containing bromides and pilocarpine—succeeded in controlling the paroxysms and maniacal attacks of one patient, who had been uninfluenced by the bromides alone.

The study of individual idiosyncrasy and the careful graduation of the doses of drugs, are points of importance which are, nevertheless, apt to receive insufficient attention in large institutions where the number of patients is proportionately large as compared with that of the medical officers. The method now in use at Claybury has proved fairly satisfactory: a continuous record in tabular form is kept in each ward, showing at a glance the number of day and night fits of each patient, together with their particular medicine—its dose and time of administration. The dose is gradually increased until, with full toleration of the drug, the fits either cease or are reduced to a minimum. Again, in the course of time the dose is cautiously lowered—so long as the result is satisfactory. In this way, and by varying the drugs used, it becomes possible to discover those conditions which are most suitable to each patient.

Undoubtedly, by the use of bromides, it is possible in many epileptics to diminish the severity and frequency, or even completely prevent the occurrence, of the paroxysms ; but experience frequently teaches that in dealing with epilepsy in the insane, the cure may be worse than the disease, and that this suppression of the storm will, in many cases, lead to its manifestation in other directions. With the exception of two cases at Claybury, whose severe and frequently recurring fits have only been controlled by large doses (3ij to 3iij) of potassium bromide *per diem*, and without any toxic symptoms, it has not been found that large doses are well tolerated. The suppression of the major attacks, as is well recognised, not infrequently gives rise to the occurrence of a large number of minor fits, which are less easily controlled ; and these patients become less manageable, and are frequently falling down and sustaining cuts and bruises. Other cases become utterly helpless and incapable, and, passing into a state of hebetude, or even stupor, neglect themselves and their natural functions, requiring to be dressed and fed. Of course, such conditions may arise in the epileptic insane apart from the use of drugs, but it is evident that in some instances they are induced more often if the bromides are "pushed."

As regards the management of the status epilepticus : in a few cases the writer has followed the recommendation of Paul Garnier and Cololian (6) who, considering this condition to be a state of intoxication, endeavoured to diminish the toxicity, by (1) lavage of stomach and bowels, and (2) by giving diuretics, such as milk. In the first place the stomach is washed out with a weak solution of bicarbonate of soda, and a pint of warm, peptonised milk is at once given, together with 5 gr. of calomel. The lower bowel is then washed out by means of a copious enema and half a pint of warm, normal, salt solution may be left in the rectum ; this process is repeated twice a day if necessary. Up to the present no difficulty has been experienced, and in no instance has vomiting occurred.

Special attention should be given to the skin, which may be sponged with warm water, while the flannel coverings are repeatedly changed if there is much sweating. Garnier gave subcutaneous injections of artificial serums. The following is a formula of one of them :



Chloride of sodium	.	.	5 grammes.
Sulphate of soda (crystallised)			10 „
Distilled water	.	.	1000 „

In two cases the writer tried a continuous subcutaneous injection of a sterilised, normal, salt solution, the nature of the convulsions permitting the retaining of the “needles” in the thighs, and three to four pints were slowly injected during the day. Both cases were extremely severe and prolonged; one recovered, and the condition of this patient improved under the injection, but the convulsions continued for many hours after the injection was stopped. No opinion can be formed on so limited an experience, and it is difficult to come to any conclusion as to the best treatment for this grave condition. Frequently the administration of a large enema, followed by the injection of chloral hydrate gr. xl, potass. bromide ʒj into the rectum, is sufficient to stop the convulsions. If this fails chloroform may prove successful, but the paroxysms are apt to re-commence as soon as the effect of the drug ceases. When these methods fail, and when, from previous experience, it is known that the paroxysms are usually persistent and severe, it is worth trying lavage with injections. This treatment, at least, fulfils certain definite indications—*viz.*, the washing-out of the stomach and unloading of the bowels—the promotion of diuresis and diaphoresis, and the supporting of the patient’s strength.

With regard to the second indication—the removal of exciting causes—the effects of peripheral irritation, especially those which arise from abnormal states of the alimentary tract, are too well recognised to require further comment. Yet it is impossible to over-estimate the importance of a systematic examination of the mouth, especially the condition of the teeth, which, in the class of patients admitted into county asylums, is usually deplorable. Not alone are the teeth carious, the gums soft, and in many cases in a condition of suppurative gingivitis, but alveolar abscesses, and even pyorrhœa alveolaris, are frequently met with. Moreover, in the states of hebetude and stupor into which these patients sometimes pass into for a while, septic pneumonia is extremely liable to bring about a fatal termination.

Much benefit has followed the removal of carious stumps, the introduction of tooth-brushes, and the use of mouth-washes, of which the following has proved a useful example :

Ol. menth. pip.	.	.	.	$\mathfrak{m}\frac{1}{6}$
Tr. auranti	.	.	.	$\mathfrak{m}\times$
Sodi benzoat.	.	.	.	gr. $\times$
Acid carbol.	.	.	.	$\mathfrak{m}\text{ij}$
Ol. gaultheriæ	.	.	.	$\mathfrak{m}\frac{1}{6}$
Saccharin	.	.	.	gr. $\frac{1}{2}$
Thymol.	.	.	.	gr. $\frac{1}{4}$
Aqua ad	.	.	.	$\mathfrak{z}\text{j}$

Careful attention to the diet of those patients who are more or less edentulous should not be omitted.

Only second in importance to the treatment of the paroxysms is the observation and management of the psychic manifestations of this disease and the episodic symptoms occurring in conjunction with the attack or its equivalent; attention to the general health and the study of individual cases and their reaction to drugs, in order to arrive at that point where, with a satisfactory diminution of the paroxysms, there is the least disturbance of the mental equilibrium, will, in the majority of these incurable cases, meet with the best results.

In publishing these notes the writer has the kind permission of Dr. Robert Jones, under whose supervision these observations have been made.

#### REFERENCES.

- (1) *Revue de Psych.*, No. 1, 1900.
- (2) *Ungar med. Presse*, February 16th, 1903.
- (3) *Bulletin Médical*, 1891.
- (4) *Revue de Médecine*, 1895, p. 750.
- (5) *Traité de Thérapeutique des Maladies Mentales et Nerveuses*.
- (6) *Ibid.*, p. 385.

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### *A Demonstration of the Lesions, experimentally produced, in the Spinal Cord and Cranial Nerves by the Action of Toxins.* BY Drs. ORR and ROWS.<sup>(1)</sup>

IN a previous paper we described the lesions in the posterior columns of the spinal cord in cases of general paralysis, and pointed out their similarity with those in early tabes dorsalis. We showed that the degeneration always commenced at the point where the posterior roots enter the cord. It is here that

the sensory fibres become part of the central nervous system and lose their neurilemma sheath; and in all cases we found that precisely at this point degeneration began.

While studying these lesions we had indications that it would be advisable to inquire into what was known of the lymphatic system of the posterior roots and columns; and we found indisputable evidence that there was a continuous flow of lymph upwards along the nerves to the cord.

Let us briefly review the data on which these assertions are based. It is well known that tetanus and rabies spread to the cord by the nerve-paths; and in this connection we might mention the experiments of Marie and Morax, who, after cutting the nerve to the fore-limb of an animal, and, later, injecting a lethal dose of the toxin into its paw, found that no convulsions followed.

Homén and Laitinen, after injection of streptococci into the sciatic nerve, traced the organisms upwards into the meninges of the cord; while Pirrone, experimenting with the pneumococcus, found changes in the cord, but limited to the side corresponding to the nerve injected.

But, in addition to organisms, chemical and inert substances have been used with like results, *e.g.*, Guillain injected ferric chloride into the sciatic nerve, subsequently introducing potassium ferrocyanide into the general circulation, and they found Prussian blue in the posterior roots. Sicard and Bauer, using China ink, found after injection into the nerve that the granules ascended along the nerves towards the cord.

It was evident that, if these views were correct, we ought to find in the cord of cases in which some septic focus existed, lesions of the posterior columns occasioned by the presence of toxins ascending in the lymph-stream. On examining cases of brachial neuritis (infective), bed-sores, suppurating knee-joints, septic psoas abscess, we found in the cord of all the lesions expected.

We then submitted our theories to experimental test, and were successful in inducing posterior column lesions in rabbits exactly similar to those already found in man.

The method we employed consisted in the introduction of celloidin capsules containing organisms under the gluteal muscles of rabbits, in close apposition to the sciatic nerve. As we anticipated, the toxins, escaping through the celloidin, passed

upwards, and in the posterior columns of the cord produced lesions of varying intensity.

Turning our attention next to the pons and medulla, we found that lesions of the cranial nerves commenced exactly at a corresponding point to those of the spinal cord in both sensory and motor nerves ; and by the experimental method we were able to reproduce these cranial nerve lesions in rabbits. In this instance the celloidin capsules were placed under the skin of the cheek.

*Conclusions.*—(1) Toxins readily travel up spinal and cranial nerves to the central nervous system. (2) While these nerves in their extra-medullary portion possess a neurilemma sheath, and are protected by its vital action, in their intra-medullary part, having lost their neurilemma, they at once undergo degeneration. (3) The first change is a primary degeneration of the myelin ; axis cylinders and nerve-cells are evidently affected later. By the osmic acid reaction the myelin degeneration is shown in the form of large and small fusiform masses, isolated globules, and elongated thin threads on which are seen moniliform swellings.

It seems to us that the results of our investigation suggest the possible lymphogenous origin of some nervous affections. We know that tabetiform and cranial nerve lesions in General Paralysis, and in Tabes itself, are not the result of nerve-cell degeneration, but are initially a primary affection of the myelin sheath commencing where the neurilemma is lost. In our clinical cases and experimentally we have shown similar lesions starting at the same point, the result of absorption from a definite toxic focus situated outside the central nervous system, the toxins gaining access by the lymph-stream. May it not be possible that the former lesions are also the result of toxins passing to the cord and pons by the lymph-stream from some external, but as yet unknown, focus ?

(1) This demonstration was given at the Quarterly Meeting of the Medico-Psychological Association held at the County Asylum, Radcliffe, on February 22nd, 1907. The experimental portion of this investigation has been carried out under a grant from the British Medical Association and will be published shortly *in extenso*.



## Occasional Notes.

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### *Registration of Nurses.*

The subject of the registration of asylum-trained nurses is such an important matter that the following report of the action of the Association, by Dr. Wood, should receive the attention of every member. There will no doubt be very serious opposition to the Registration Bill in the Houses of Parliament, and it is at the least doubtful whether it will pass into law during the present session.

This at least is certain, that if nurses are to be registered by law it is our duty to be in the forefront in pressing the claims of the asylum-trained nurses, for whose advancement the Medico-Psychological Association has done so much.

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### *The State Registration of Mental or Asylum-Trained Nurses.*

By T. OUTTERSON WOOD, M.D.

The question of the State registration of nurses cannot lie dormant, for it is practically certain that ere long the supporters of the movement will be endeavouring to induce the House of Commons to legislate upon the subject.

Whatever views the individual members of the Medico-Psychological Association may hold upon the subject of State registration for nurses generally, as a body, it is nevertheless certain that we have a duty to perform towards our own nurses, which is to see that in any system of State registration they shall get full justice, and a due recognition of their claims to be included in any scheme which is laid before Parliament.

If we ourselves do not move in the matter we may be perfectly sure that those who have hitherto opposed the claims of our nurses will not move a hand to help them, and they may find themselves left out in the cold. More especially is it our duty to press this matter forward, seeing that the Select Committee of the House of Commons has included in its report a special clause calling attention to the undoubted claims they possess, to be recognised in any act authorising the State registration of nurses.

Being impressed with the necessity for taking action, and it

having come to my knowledge that a petition in favour of State registration had been sent round to obtain the signatures of asylum-trained nurses by an outside body of hospital-trained nurses, I addressed a letter to the President and Council of the Association in February last to the following effect :

*February 11th, 1907.*

My dear Mr. President,

I very much regret I shall not be present at the meeting at Nottingham. My doctor forbids me to go, and I must obey, though I do so most reluctantly. Had I been present I should have proposed that the Medico-Psychological Association, instead of allowing its nurses to sign petitions for other people, should itself promote a petition of its own, or at least conjointly with a recognised nursing body, such as the Royal British Nurses' Association, which has always helped us as far as it could. Much better, however, for us to do it by ourselves. Supported, as we now are, by the recommendation of the Select Committee, we should have a far better chance of being recognised by the State than if we mixed ourselves up with would-be champions of hospital nurses, who squabble and fight among themselves. We could present a petition which, in point of numbers, and coming from such a strong and united Association as ours, would be bound to command attention. I consider we shall be wasting an excellent opportunity of proclaiming our aims and objects in regard to our nurses if we neglect to take steps to petition on our own account for their State registration.

No heterogeneous collection of hospital nurses can present such a solid phalanx as we can, and I am most strongly opposed to our joining any clique which may be opposed to the Royal British Nurses' Association, which has recognised our claims, and which, but for a factious opposition, would have enrolled and registered our nurses upwards of ten years ago in a separate list, as recommended by the Select Committee.

Our support is far too valuable to be thrown away. We should retain and use it ourselves for our own nurses.

I am, dear Mr. President,

Yours very faithfully,

T. OUTTERSON WOOD.

Robert Jones, Esq., M.D.

The result of my communication was, that the matter was relegated by the Council to the Parliamentary Committee to deal with. This it at once proceeded to do, and as soon as possible the following circular was sent to every member of the Association :

Dear Sir or Madam,

Signatures to a petition issued by "The Society for the State Registration of (Hospital) Trained Nurses," having been requested from asylum-trained nurses, the members of the Medico-Psychological Association are earnestly desired to abstain from supporting such petition, and for the following reasons :

(a) The petition makes no mention of the special claims of asylum-trained nurses. It ignores them.

(b) The petition is promoted by those who have hitherto strenuously opposed the recognition of asylum-trained nurses.

(c) The Medico-Psychological Association is preparing a petition of its own in favour of the registration of mental or asylum-trained nurses, *in a separate register, as recommended by the Select Committee of the House of Commons.*

(d) It is of the greatest importance that every asylum-trained nurse, male or female, should sign their own petition *in favour of being included in their own register*, or they may fail to obtain registration.

The form of petition is under the consideration of the Parliamentary Committee of the Association, and copies for signature will be forwarded as soon as possible.

Yours faithfully,

ERNEST W. WHITE,

March 6th, 1907.

Chairman of Parliamentary Committee.

The Parliamentary Committee again met, and after careful consideration drew up the following petition, which was also sent to every member of the Association :

To the Right Honourable Sir Henry Campbell-Bannerman,  
Bart., etc.

The humble petition of the Members of the Medico-Psychological Association of Great Britain and Ireland, founded in 1841, and numbering over 640 medical practitioners, mental or

asylum-trained nurses, male and female, of whom upward of 7000 hold the certificate of the Association for proficiency in nursing the insane, and who are already on the register of the Association, and others interested in the welfare of the insane, sheweth—

1. That the claims for registration of mental or asylum-trained nurses have been clearly recognised by the Select Committee of the House of Commons.

2. That in any scheme for the State registration of nurses, the recommendation of the select committee to the effect that mental or asylum-trained nurses who hold the certificate of the Medico-Psychological Association should be admitted to State registration in a separate register should be carried out.

3. That the certificate of the Association is only given after a definite training, and the successful passing of an examination of one uniform standard throughout the Kingdom.

4. That the Medico-Psychological Association is the only one which possesses a uniform standard of training and teaching by systematised courses of lectures, theoretical and clinical, and an examination which is uniform for every candidate.

5. That the examination is by means of written papers, practical work, and *vivâ voce*, and is conducted by examiners specially appointed by the Council of the Association, with the aid of independent assessors.

6. That there are upwards of 7000 trained, examined, and certificated nurses, male and female, now on the register of the Association, who are holding with great credit responsible public appointments, and earning their living in the various asylums for the insane throughout the United Kingdom, the Colonies, and the various dependencies of the Crown.

7. The register of the Medico-Psychological Association is kept by, and under the authority of, the Council of the Association, and under the immediate control and supervision of the registrar, who is an honorary officer of the Association.

8. For sixteen years this unique scheme of providing an uniform system of training and examination has been in operation, and it has been in every way successful.

9. That the claims for the State registration of mental or asylum-trained nurses was fully recognised in a Bill lately before Parliament, which was one of the causes of the appointment of the Select Committee.



10. That as far as is known not a single valid objection to the State registration of mental or asylum-trained nurses in a separate register has been raised by anyone.

11. Your petitioners most earnestly pray that you will take this matter into your favourable consideration, in view of the fact that the proper nursing and care of the insane of all classes is of such vital importance to the community, and that none but efficiently trained, examined, certificated, and registered men and women should be employed to undertake such responsible and trying duties.

And your petitioners will ever pray, etc.

The point that I wish especially to draw attention to at the present time is, that although the form of petition strongly advocates the claims of nurses—male as well as female—holding the Certificate of the Association, it must not be thought I am unmindful of the large numbers of excellent men and women nurses who were trained, examined, and certified by the various asylums both before and since the founding of our Association Certificate sixteen years ago. In my opinion there can be no doubt the best course for the Association to adopt is to advocate the State registration of all nurses, whether trained, examined, and certificated by the Association or by individual asylums. I am most anxious to advocate the claims of the latter as well as those who hold our certificate, and for this reason, that in all cases in which legislation has followed the establishment of a system of education (as for instance, in the Medical Act, the Dentists' Act, the Midwives' Act, and others), there has been a period of grace allowed during which those who had been engaged in their occupation for a fixed period prior to the passing of the Act, and could produce satisfactory evidence of fitness, should be allowed to register, and this should be the case with regard to the State registration of our nurses. We are obliged to petition Parliament on behalf of those who hold our certificate, but there is nothing to prevent us doing our best to have those admitted to registration who, although they do not hold our certificate, can yet bring forward evidence to the effect that they are trained, and have been employed as mental or asylum-trained nurses for a certain time before the Act came into force. I am in favour of using the claims of our nurses holding our certificate as a lever to open

the door to the others, who can show by their training, length of service, and good character, that they are worthy of being recognised in the same way that the midwives were.

I claim no exceptional treatment for them, but only ask for the same treatment as has been meted out to others. By so doing we shall be able to have placed upon the separate register a large body of deserving and experienced nurses who are engaged in institutions, both private and public, throughout the kingdom, and, in addition, many who, having left asylums, have entered into private work fully equipped and competent for their duties. The value of these excellent nurses is well known to physicians in private practice. The care and treatment of private patients would be well nigh impossible outside an asylum without them. Indeed, it is a duty we owe to the public to see, as far as we can, that no nurses shall be employed who are not thoroughly trained and competent, and the compulsory registration of those engaged in private work would be an additional safeguard to the public, who are too often imposed upon by untrained and incompetent persons passing themselves off as qualified. Again, it must be remembered the nurses holding our certificate are but a small proportion of the total number employed in private and public institutions and doing nursing on their own account, or in connection with nursing homes or associations.

Nurses who have not taken our certificate are not altogether to be blamed; it may be the medical superintendents of the asylums where they were trained were indifferent, and did not trouble to go in for the examinations instituted by the Association, or perhaps they thought their own good enough, and gave their own certificates, but it would be extremely hard upon the nurses to debar them from registration for no fault of their own. We must not forget that a large number of asylums in the first instance did not join our system, but as its excellence was proved they came in one after another, until now we practically have all of them.

If, therefore, we can succeed in procuring registration for all properly trained mental nurses who can prove their right to be registered by length of service, efficient training, and good character, assuming that our seven thousand represents but a quarter of the whole of the nurses employed, we should be able to open the State register with no less than fifteen thousand

members if only half of the others qualified, and that would truly be an excellent beginning. My own belief is that it would soon be twenty thousand, and in point of numbers alone it would justify our action.

## Part II.—Reviews.

*The Hygiene of Mind.* By T. S. CLOUSTON, M.D. Methuen & Co., Essex Street, London.

*Nature* produces the possibilities of the individual, but it is left for *Nurture* to realise these. By Nurture, Galton means not only the physical, mental, and moral environment, but also the social, domestic, and educational, and it is seen what a comprehensive influence is implied by this term, which is co-extensive with the hygiene of mind, selected by Dr. T. S. Clouston as the subject of his theme.

It may be asked why a mental pathologist, whose life-experience is that of abnormal mental phenomena, should presume to discourse upon the problem of the healthy mind, and how such may be preserved. But does not the experience of hospitals provide the ordinary physician with the knowledge of how bodily functions are associated and correlated in health and disease, how interdependent they are in the various departures from health, and how the well-being of the body must depend upon that of its individual members? Similarly with the study of mental alienation, it is upon the regular development through proper training and upbringing that the even balance of the various component factors of mind is maintained, and mental health is secured. It is the study of mental disease which points out to the psychiatrist the ill-balanced judgment, the over-emotional temperament, and the non-moral conduct which cause failures in life; and may we not often learn more from our failures than from our successes? Are not all mental experiences antithetical? A statement that a line is straight implies that it is not curved; we know the good from a familiarity with the evil, or that which is bad, light from darkness, heat from cold, solids from liquids. It is through a happy combination of all the elements of mind that a healthy corporate whole can be attained, and, after all, it is the whole mind that thinks, the whole mind that feels, and the whole mind that wills. From his unique experience of mental pathology, therefore, Dr. Clouston is qualified beyond any doubt to deal with the application of hygienic rules—physiologically and psychologically interpreted—towards favouring “mental betterment.” Indeed, the impression left on our mind, after reading his book, is that it is the work of a great and good man—an impression which in no whit falls short of actual knowledge of the author as realised by those who have an acquaintance with his optimism, earnestness, and enthusiasm.

The first three chapters of the book deal especially with the relationship between mind and matter—*i.e.*, between mental processes and

physical processes. The author throughout this volume rejects the idea of any unknown influence, personality, or soul, and is inclined to brush it aside as a mere metaphysical idea. We are not convinced of the correctness of this attitude and refrain from discussing the religious questions involved in this and subsequent passages.

The remarks of the author on p. 190 relating to the religious instincts in adolescence are clear, clever, and emphatic, but we are unable to follow him when he lays down the dictum that sex must be eliminated from the religious instinct.

The fourth chapter lays down the general principles to be observed in mental discipline, and, as the author divides the age periods of their hygienic value, there is, of necessity, some repetition, as such a classification implies a consequent overlapping. The author makes full use of the spontaneity of childhood, and emphasises the functional union of all sensory impressions in the attention. His aim throughout is to encourage brain-impressions, which can be made use of afterwards, and the proper cultivation of the senses with a due deliberation—one thing at a time, as there is a need to establish associations. The control of motor co-ordination by exercise and play, the association of mental impressions for intellectual purposes, and the establishing of proper and correct habits in nerve pathways are fully entered upon. The whole volume throughout is delightful reading, and it is a book that should be of great help to mothers and teachers. At the end there are concluding chapters upon the decadent period of life, into which are condensed the wisdom of Shakespeare and Cicero. The price of a happy old age is "eternal vigilance" in youth, and the secret of a happy youth is occupation, which will afford the happiest reflections for declining years. There is no doubt that, even with the best intentions, the climacteric for both sexes is a period of uneasiness, and the advice to cultivate "hobbies" deserves more serious attention than it obtains. A time comes when special pursuits fail, but the man with many "mental facets" finds years of joyous repose towards the end of his journey. One fact insisted upon by Dr. Clouston is that grandparents find joy in their grandchildren, and we know the evil effect upon the mind through the seclusion of old people in almshouses. In the secluded life of eleemosynary solitude there are no mental stimuli present to rouse the decadent faculties into response, and an old-age pension, whatever else it may effect, will tend to restore to the aged their natural life and surroundings. In our admiration for this volume, with its direct message clearly and physiologically expressed, we are convinced of universal sympathy, and it would not be wide of the mark to state that the distinguished author has never produced a better work.

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*Éléments de Médecine Mentale appliqués à l'Étude du Droit* (Cours professé à la Faculté de Droit en 1905). Par le Docteur LEGRAIN, avec Préface de M. GARÇON. Paris: Arthur Rousseau, 1906. Pp. xxvi, 450. Price 10 francs.

The lectures on mental diseases which Dr. Legrain has published in this volume, apart from their intrinsic value, are noteworthy from the



circumstances of their origin. They were delivered during the session of 1905 to the students of the Paris Faculty of Law as a *cours libre*, under the auspices of the Council of the University, and in their book form they receive a further mark of official recognition in a foreword of rather timid approval from the Professor of Criminal Jurisprudence. Their appearance is therefore an interesting sign that the permeation of the legal mind by the modern spirit has commenced—at all events amongst our neighbours—and that it is beginning to be realised that some acquaintance with the physiology and pathology of mind is desirable in those whose avocations require them to estimate the quality and the motives of diseased conduct.

The object which the author has set before himself in these lectures is not so much to enlighten his hearers on those specific problems, regarding which the medico-legal expert is ordinarily called on to give evidence, as to familiarise them with the aspect under which conduct and thought appear to the physician who has to deal with their aberrations in crime and in insanity. The volume is not, therefore, a treatise on legal psychiatry in the usual sense of such a title, but is rather, as the author himself defines it, an examination of the criminal law in the light of medical science. This special aim—to bring home to a legal audience facts and assumptions new to them but commonplace to the alienist—implies, of course, that the book has no pretention to novelty of matter; but, none the less, Dr. Legrain has contrived to deal with his subject in so fresh and original a manner, and has indicated so many suggestive lines of thought, that the work, in addition to fulfilling its proper end, as it most admirably does, will appeal also to the wider circle of readers, lay and medical, who are interested in the new tendencies in criminology.

The author's chief concern being, as we have indicated above, to inculcate the spirit and method of inductive science as opposed to the spirit and method of *à priori* reasoning, he naturally lays particular stress on the clinical facts most subversive of those preconceived ideas regarding the freedom of the will and the unity and stability of the ego which underlie the old doctrines of crime and punishment. In the earlier lectures, dealing with the growth, the changes, and the decay of the personality, he seeks his illustrations of the instability of the ego in the diseased states, such as the *délire chronique* of Magnan, where, by a process of slow evolution, a new personality is gradually built up, or in the phenomena of hallucinatory insanity, where the changes in the sense elements of consciousness dominate thought and action, or, again, in the classic observations of multiple personality. From this introductory matter he then passes to the consideration of the rôle of the subconscious mind, to which, under its various aspects, the remainder of the volume is devoted. The emergence of the subconscious in dreams, in artistic inspiration, and in other normal phenomena is briefly referred to, and a description is given at somewhat greater length of its influence in recurrent insanity. In this connection the author suggests a very interesting parallel between this category of mental disease and certain forms of criminal recidivism. As we observe in some cases of insanity, especially in alcoholic subjects, that a delirium of practically identical content will repeat itself in successive attacks, vanishing completely

during the sane intervals, so we meet with criminals, who, time after time, in a stereotyped way, will commit the same offence. In one case it is a disorder of thought, in the other a disorder of conduct, that rises suddenly out of the subconscious; it seems natural to assume that in both cases the psychological mechanism must be very similar. And the author would see further evidence of this kinship in the familiar cases where the two forms of disorder seem to alternate in the same individual, who then, according as his disease is more manifest in the sphere of thought or in the sphere of conduct, will find his way at one time to the lunatic asylum, at another to the prison.

In these cases of what he terms *délires à éclipse* and *délits à éclipse*, there is a subconscious automatism: in the dream-state of the epileptic, the absinthe drinker, and the alcoholic, the mechanism is the same, save that the automatism is unconscious; and it is the same also in the obsessions of the hereditary degenerate, with the sole difference that here the automatism is fully conscious and is accompanied by a lucid but powerless intelligence. Even the moral defective may be looked at in the same light, and viewed as an "aconscious automaton."

What, then, is the bearing of these facts on the problem that the criminal presents to society? If the personality is thus in a perpetual flux, where the dominant current at any moment may be decided by such incalculable forces working in the subconscious, what becomes of free will and responsibility, and how is their abrogation to be reconciled with the safety of the community? To these questions the author gives only a general reply, indicating merely the direction in which the solution of the problem is to be sought, but not entering into the details of the revolutionary changes which his doctrines would demand. The effect of slight indefiniteness which is thus left is possibly intentional, for it is not difficult to imagine that more than once in the course of these lectures the staid and respectable authorities of the *École de Droit* must have felt considerably astonished at their own audacity in admitting such heretical teaching at all, and that towards the end a little dilution of the new wine was necessary lest the old bottles should burst.

W. C. SULLIVAN.

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#### *A New Journal of Legal Psychiatry.*

The appearance of the *Revue de Médecine Légale Psychiatrique et d'Anthropologie Criminelle* is an interesting indication of the increasing realisation in scientific circles in France of the importance of the medical aspects of criminology. The journal, which is published in connection with *L'Encephale*, is to appear every two months, the contents of each number being arranged under the following heads: (1) Original memoirs; (2) medico-legal observations; (3) judicial review; (4) bibliography and analysis of current literature; (5) proceedings of learned societies; and (6) medico-legal generalities. The editor in chief is M. Antheaume, of Charenton, and the list of collaborators includes the names of a large number of distinguished alienists and neurologists.

The first number (February, 1906), contains, amongst other interesting matter, a paper by Dr. Régis, on "Traumatic Neurasthenia in the Sub-

jects of Arterio-sclerosis," and the first of a series of articles by Dr. Paul Serieux, on "Special Establishments for Criminal Lunatics in Germany."

W. C. SULLIVAN.

*Ueber Störungen des Handelns bei Gehirnkranken* [On Derangements of Action in the Insane]. Von Prof. Dr. H. LIEPMANN. Berlin: 1905. Pp. 162, 8vo.

Although much attention has been bestowed upon disorders of speech under the headings of "aphasia" and "paraphasia," the different incapacities amongst the insane in the performance of designed actions have met with little attention. These have been considered in the present work under the title of "Apraxia." Hindrance to the execution of voluntary actions may be owing to many causes besides paralysis. There may be loss of the kinæsthetic sensation or the appreciation of the amount of effort required, or the loss of memory, or of motor conception, deranged association, the loss of attention and concentration, or the failure of a decreasing intellect to direct the complex machinery of the muscular system, or loss of the correct estimation of distances, cortical blindness and cortical deafness. These several conditions are carefully analysed and differentiated by the author, and examples cited from his own observation as well as from the descriptions of others, especially Professor Pick. The treatise is permeated by profound thought, and no one can read it without gaining clearer ideas on the subject.

WILLIAM W. IRELAND.

*Dott Montesano Guiseppe; Avviamente all' Educazione e Istruzione dei Deficienti, Lezioni dettate nella Scuola Magistrale Ortofrenica di Roma e raccolte da Cesare de Felicis.* Rome: 1905.

This little book is designed for teachers in schools for idiots and imbeciles. It comprises the lessons given and the exercises pursued in the Training Institution at Rome, founded by the National League for the protection of deficient children, under the superintendence of Dr. Montesano. The lessons have been collected by Cesare de Felicis. The authors give a list of a score of books in French, English, and German, upon idiocy and imbecility, by the aid of which further study on the subject may be pursued. They warn the reader that little or nothing can be found in these works having a practical interest for the teacher. It is true that many, or most, of the writers cited have been content to indicate in a more or less cursory manner the divers methods of exercising the minds of such children and the apparatus useful for this purpose. The ways of effecting this education are devious; much must be left to the invention of the teacher, which should be constantly on the alert. Yet it may be acknowledged that in no work known to us has a well chosen course of instruction been so minutely and literally laid down. The book comprises seventy pages, double columns, medium octavo. At the same time, the general remarks about the intellectual

and moral training of the feeble-minded are judicious and philosophical. Dr. Montesano has a firm grasp of the whole subject both analytically and synthetically. Some of the devices to attract the attention and enlist the interests of the pupils are novel and ingenious. The motor and sensory exercises are displayed by twenty-nine figures. Altogether this little treatise well fulfils its purpose. It might be profitably translated into English for the use of the training schools in Great Britain and America.

WILLIAM W. IRELAND.

*Metaphysik. in der Psychiatrie.* Von Dr. P. KRONTHAL. Fischer : Jena, 1905. Pp. 92, medium 8vo.

Dr. Kronthal has made wide and diligent readings of the works of the metaphysicians, ancient and modern, English, French, and German. As Voltaire said, metaphysicians are like ballet-dancers. They skim, skip, wheel about for a while, only to end at the place they set out. One learns from their books little else than so many definitions. From his studies Dr. Kronthal has taken a point of view which leads him to treat modern psychiatry in an inconveniently sceptical way. He reminds us that no one knows anything besides his own sensations. What appears yellow to him may be a quite different impression to another man. The real method of natural philosophy is to cling to direct observation, and to be very wary of inferences or general realisations. All men's doings are to be regarded as reflexes aroused by stimuli applied to the sensory nerve tract. No nerve-fibre either begins or ends in a nerve-cell. The fibre is not a continuation of the cell or of its fibrillæ. The nerve-cell to which such great functions have been assigned by some pathologists never divides; it is a dead body and serves to isolate the nerve-tracts. Dr. Kronthal's views on this question, founded upon serious microscopical studies, are given at length in his paper in *Archiv für Psychiatrie*, 41 Band, I Heft. The author blames Kraepelin, Ziehen, and other well-known psychologists for using metaphysical terms, amongst which he enumerates perception, association, will, imagination, anger, grief, and fear. To his mind there is nothing in the living body save reflexes, and the psyche is the sum of all the reflexes. But to do without these familiar expressions would be awkward. Metaphysicians will prove to you that there is nothing save a modification of your own consciousness; but then there are modifications and modifications. All our doings may be owing to reflexes, but we need some qualifying adjective to distinguish them. There are reflexes, strong, lively, weak, swift, slow, abnormal, accompanied by pleasure or by pain. It may be an assumption to guess what another man feels and thinks under the changes of his countenance, but to act in this world one must begin by assuming something. Memory, the author tells us, is something which has happened before, the repetition of similar or identical stimuli. He does not explain how the repetition of a second impression is recognised. To awaken the memory one must have a change; identical impressions do not rouse us. A man is not like a puppet, moved by pulling strings;



between the sensory end and the motor end there are a variety of processes with which the psychiatrist has to deal, and for these we must have expressions, which may be called metaphysical.

While he is a little confident on the affirmative side, Kronthal is dogmatic on the negative. He denies free will, reasoning after the manner of Buckle, who argues that men's actions are proved by statistics to depend upon circumstances beyond their control—*e. g.*, the number of marriages in England is always low when bread is dear. But it may be replied that men desire to be married under certain conditions. No sane man will take a wife if he knows he cannot buy for her enough of bread to eat. The dearness of food does not take away the will to marry, but the opportunity for doing so.

As conclusions, Dr. Kronthal presents us with his views upon these grave questions which lie near or beyond the bounds of our knowledge, and which have been debated for thousands of years. In the universe he sees an everlasting energy. [Is energy not a metaphysical expression?] Pantheism (Allbeseeltheit) is, he tells us, adopted by the best thinkers, not only amongst those eminent in the study of natural phenomena, but by those who are styled philosophers. Spinoza, Leibnitz, Lotze, Wundt, v. Nägeli, Zollner, to name a few of them, hold that nature is besouled in all her parts, not this or that body. The survival of the soul after death he considers to be an illusion, for which he offers an explanation on his last page. We cannot, in a limited review, discuss the weighty subjects for which Kronthal's own pages give insufficient room. He has applied his mind closely to the question which he treats, and his pamphlet deserves the attention of psychologists.

WILLIAM W. IRELAND.

*La Démence.* By Dr. A. MARIE. Paris: Octave Doin, 1906. Pp. 492, 8vo.

The present work forms one of the *Bibliothèque Internationale de Psychologie Expérimentale*, a series of fifty volumes, written by various authors, under the general editorship of Dr. Toulouse, of Villejuif, the whole being intended to show the stage at which the various divisions and applications of experimental psychology stand at the present day. "Experimental psychology" is apparently understood in its widest sense, and implies the scientific as opposed to the metaphysical method, rather than the strictly quantitative procedures with which the phrase is associated in this country.

Dr. Marie sounds the keynote of the whole book in his statement that "psychological states are to be regarded as a function of the brain." This irreproachable postulate, however, leads him, in many places, to adopt theories which, founded on the slenderest hypothesis, must be regarded as unproven and unfruitful. As an example may be cited the oft-repeated application of the theory of nerve-cell amœboidism to the explanation of psychical states. The text often tends to give one the impression that the theory is a matter of established fact, rather than a centre of heated controversy.

Dementia is defined as "a weakening or total loss of the intellectual faculties, without possibility of return," and the first part of the book is devoted to a consideration of its general characters, both pathological and psychological. The pathological section is mainly founded on the work of Klippel. The psychology of dementia is fully treated, and this chapter contains a large amount of interesting matter. The scheme of questions in use at Villejuif is explained, together with the results of various quantitative experiments. Among the facts thus established may be noted the early loss of calculating power in general paralysis, compared with its relative persistence in vesanic dementias and in dementia præcox. The modern doctrine of psychological disaggregation is applied to the various affections of the personality—the loss of the sentiment of reality, ideas of negation, doubling of the personality, and the frequent delusional interpretations of the altered cœnæsthetic sensations. The emotions are somewhat perfunctorily treated, but considerable space is given to the phenomena of amnesia. In this section Ribot is largely followed, and some interesting deductions, both theoretical and practical, are made from his "law of regression."

A chapter is devoted to the historical development of the subject, commencing with Pinel, and Esquirol-Bayle's differentiation of general paralysis is described, and the numerous modern attempts to separate other varieties from the group of the dementias. The diverging paths of the French and German schools, the development of the concept of degeneration by Morel, Magnan, and their followers, and the gradual evolution of dementia præcox by the Heidelberg school, are lucidly traced out. The author concludes the chapter by adopting Dupré's view that every age has its dementia, and, in the present state of knowledge, thinks it better to group his material under the headings—(1) the dementia of early life (*démence précoce*); (2) the dementia of adult life (general paralysis); (3) senile dementias. The vesanic dementias form a link between (1) and (2), the organic a link between (2) and (3). A pathological basis for this classification is found in Klippel's distinction between neuro-epithelial and vasculo-conjunctive dementias. In the former only the nerve-cells and neuroglia are affected, in the latter the lesions extend to the vessels and meninges. The neuro-epithelial group includes dementia præcox and the vesanic dementias, while general paralysis, organic, and senile dementia are vasculo-conjunctive in type.

The second part of the book deals with the various dementias in detail. The chapter on "Démences Précoces" includes, not only dementia præcox in its limited sense, but also the vesanic dementias. The author makes no attempt to subdivide this group on Kraepelin's lines—in fact, the references to the latter are scanty in the extreme. He erects, however, into a separate entity a primary dementia connected with puberty, which corresponds, apparently, to the dementia simplex usually described as a variety of hebephrenia.

The chapter on "General Paralysis" is of great interest. The author inclines to Klippel's view that general paralysis is not a morbid entity, but "a clinical syndrome common to various toxic processes, with lesions, may be inflammatory, may be generative, but always characterised by their diffusion and by their progressive tendency." He thinks that

the influence of alcohol and syphilis in the etiology is at least over-rated, and ascribes the principal rôle to hereditary factors. Alcoholism is to be regarded either as an effect of the general paralysis or as a concomitant effect of hereditary causes. Similarly, syphilis is often the result of venereal excess in the early stage of euphoria, a contention supported by the fact that it is comparatively rarely met with in the antecedents of depressive general paralysis. It may be remarked that the author's statistics on this question do not appear to take into account the interval elapsing between the syphilitic infection and the incidence of paralytic symptoms, though it should be mentioned that, in his opinion, the prodromal period of general paralysis is of far longer duration than is generally supposed.

Considerable space is devoted to the psychical symptomatology of general paralysis, regarded mainly from the point of view of psychological disaggregation, with frequent references to a hypothetical anatomical basis. Some interesting cases of double personality are described, and the author thinks that this phenomenon occurs in an imperfect form with comparative frequency.

The chapter on "Senile Dementia" is noteworthy for a most excellent and complete description of the macroscopic and microscopic changes in all parts of the body, which accompany normal senility. Senile dementia is regarded as an exaggeration of the final term of normal senility. The author considers the main etiological factor to be a primary cell-alteration and a failure of nutrition.

The concluding portion of the book deals with various medico-legal and administrative details. Many of the defects in French asylum organisation here pointed out exist equally in our own country—for example, the increasing number of senile demented and other chronic cases, which act as a stumbling-block to the effective treatment of acute mental disease. As a remedy the author proposes the establishment of chronic asylums, in addition to an extension of the family-care principle. By such means, he thinks, asylums will merit less the reproach that they are institutions where one finds "administration, culture, even general medicine, but very little mental therapeutics."

Dr. Marie's work is a veritable mine of information, and its value as a work of reference is considerably enhanced by a compendious bibliographical index, which, by the way, is to be a feature of all the volumes of this series. The views of many members of the French school are exhaustively set forth, but the space and consideration devoted to German writers is certainly inadequate. The repeated attempts to translate psychological problems into anatomical terms, which Kraepelin has stigmatised as "a crude and unfruitful schematisation of clinical experience," have already been noted. Finally, from the psychological point of view, one would have liked to see a wider application to dementia and its problems, of the methods and theories of Pierre Janet.

BERNARD HART.

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*Gli Uomini Primitive* [*Primitive Men*]. By ANGELO ZUCCARELLI.  
Naples: Perrella, 1906. Pp. 125. 8vo. Price 2.50 lire.

Professor Zuccarelli, of Naples, who has lately been the recipient of a testimonial from pupils and admirers in various parts of the world, has, during the last quarter of a century, been one of the ablest and most vigorous pioneers in those new paths along which the study of abnormal humanity is now moving. He has little in common with the alienist of the old school, for whom anthropology, and even normal psychology, in any precise sense, have no existence, and who may, or may not, have some acquaintance with the abnormal classes living beyond the frontier of insanity. In Zuccarelli's work we always feel that there is a real grip of the psychological and the anthropological aspects of both normal and abnormal man, so that he is unlikely to class the individual case wrongly, or to fail to see its salient features. In his lectures on "Criminal Anthropology" at the University of Naples, in his *Istituzioni*, in his little review *L'Anomalo* (now defunct), which brought forward so many interesting cases and documents, Zuccarelli has always consistently maintained this broad outlook. He remains true to it in the present volume, which is a sketch of the prehistoric development of man, elaborated from the introductory lecture to the author's "Annual Course in Anthropology and Psychiatry." For the most part the book is a summary—clear and agreeable, without being superficial—of more or less well ascertained facts concerning early man, the maker of flints and the dweller in caves. Now and again the author refers to interesting points of contact between primitive man and abnormal man to-day. The general standpoint adopted is that of the monism of Haeckel.

The most interesting, and also the most novel, portion of the book is that in which the author describes his own explorations of the Grotta delle Ossa of Cape Palinuro, near Salerno. This is one of several caves in the district, long occupied by early man, and now difficult to obtain access to. Zuccarelli obtained many bones and flint implements, but is not able to assign their precise epoch. The volume is fairly well illustrated.

HAVELOCK ELLIS.

### Part III.—Epitome.

#### Progress of Psychiatry in 1906.

##### AMERICA.

By W. McDONALD, Jun.

For years to come, wherever American psychiatrists are met together one face and one presence will be missed by all.

On December 7th, 1906, Dr. A. E. McDonald was gathered to his fathers. Not only here but in other lands will he be mourned. He was



an honorary member of the British Medico-Psychological Association, at whose annual gatherings he was a frequent representative of the American Medico-Psychological Association, and he will be remembered by many readers of this journal as a felicitous speaker both in debate and at the banquet table. At home and abroad his genial personality had won for him a peculiar place in the hearts and minds of men. He himself had a heart and mind, and both were great. He was a graduate in law as well as medicine. His biography is one long story of constant labour, unflinching adherence to duty and unending usefulness as physician, jurist, teacher, lecturer, writer, administrator, and alienist. His fearless, competent, almost militant discharge of these offices bespoke the mind, the demand for his droll speech and cheerful presence at social gatherings bespoke the heart, while all his characteristics and accomplishments bespoke the man. Well does the writer recall the impression made upon him by our departed colleague only a few short months ago, at the annual meeting of the American Medico-Psychological Association. After a regular meeting a number of the members were gathered together about a social board when Dr. McDonald appeared in the doorway. Instantly there was a cry "The king!" and all rose to greet him. And now the king is dead, but we may not call "*Vive le roi*," for although his place is well filled none can fill his place.

Last year, in the annual letter, the writer deplored the state of medico-legal affairs in America. To-day, alas, there is no better news to carry. The situation is even worse, and the only ray of hope is found in the thought that we can scarcely sink to a lower level without experiencing that great upheaval and subsequent reform which in the world's history has always followed an era of especial degradation. If we must drink the cup to the dregs ere the natural nausea and final revolt may occur, then we pray that we shall quickly see repetitions of such legal scenes as are being enacted at the present time in New York City, until the American public in disgust shall have purged itself clean of the toxine which now goes by the name of medical jurisprudence and medical testimony. I refer, of course, to the Thaw case.

A number of eminent alienists will testify in this case that the defendant's mind was of such and such state before, during and after the homicide. An equal number of equally renowned experts will testify to something diametrically opposite. The jury and the public may, in the meantime, be left in doubt as to the irresponsibility of the prisoner but will have no doubt whatsoever concerning that of the experts. In the words of Judge Mattocks in a decision in the Chandler will case, given last November before the higher court of the State of Maine, "These expert opinions illustrate not only how dangerous, but how unfortunate that men of great knowledge, experience and skill, should array themselves upon different sides of the same proposition which can have but one solution in truth and come to absolutely contrary conclusions. It is evident that such testimony is not only worthless but insidious and dangerous, for it is impossible for the layman in the analysis of such testimony to distinguish the true from the untrue. If the untrue is acted upon, injustice must follow."

We should not, however, be too hasty in judging those experts engaged in the controversy. First, let us search our own hearts, lest there should be found some guile within us. How many of us who pose as experts would have refused to examine the defendant at the request of the attorney for either side? Many of us would have to admit having taken part repeatedly in similar medico-legal battles without experiencing feelings of shame, perhaps even congratulating ourselves upon our just and dignified attitude. In one such case in which four experts were retained by each side, all who testified for the defence stated that they had agreed to go upon the stand for the prisoner only on condition that after an exhaustive examination they should become convinced of his insanity. A perfectly correct attitude. But is it not a bit singular that each of the eight experts was able to make up his mind to testify exactly as desired by the attorney who called him? There is no question but that the great majority of medical experts mean to be honest when they engage to advise counsel or to give judge and jury the benefit of their opinions. But at least some cease to be honest with themselves when they mount the stand. Many of those who are distressed by the degraded position of American medical jurisprudence see no hope of better things until we shall have created a professional sentiment adverse to present methods. The fault is not so much with the men as it is in the circumstances surrounding their connection with the cases. When once the expert steps upon the witness stand he is no longer a learned authority whose opinion is respectively craved by judge or jury; he is no longer even a partisan witness for defence or prosecution; he is placed from that instant on his own defence. He is interrogated as to his whole professional career, as to the opinions given in other cases with which he has been connected: he is tempted by one lawyer to add a jot or tittle to the strength of his testimony or prevented from presenting the whole truth, and is browbeaten, nagged, and taunted by the opposing attorney whose whole purpose is to confuse and discredit him. He is pitted against other experts who are asked to suggest technical questions difficult to answer, or to which the answer must of necessity permit more than one interpretation. He is often forced even by the judge to answer a question with an unqualified "Yes" or "No," where such a reply cannot possibly represent the truth. Finally, he must answer an interminable hypothetical question in which certain conditions are suppressed while others are exaggerated, until neither a positive nor a negative answer can give anything to the jury but a warped conception of the opinion of the expert as to the facts in the case. The result is that sooner or later the expert scents the smell of battle, responds to the call to arms and sallies forth to the charge. Matters have gone so far that every alienist steps upon the stand with a definition of insanity "up his sleeve"; a definition framed with greatest care in such a fashion, not that the judge or the jury may be enlightened as to the nature of mental disorder, but that it may be sufficiently intangible and abstract as to be invulnerable to the shafts of opposing counsel.

But enough of criticism. Where is the remedy for such evils? It will be found only by permitting the expert to remain unbiased while forming his judgment and while stating his opinion.

Dr. Mercier<sup>(1)</sup> has ably discussed the arguments for and against an arrangement by reason of which medical witnesses might consult together and agree, if possible, on the evidence that they shall give. As he says, discussion among the examiners would tend to reconcile differences. "It would ensure that a factor, which had been overlooked by one, would be brought to his attention by another. It would place the experience of each at the disposal of all." Dr. Mercier suggests, however, that this method would not be without certain drawbacks, and fears that the experts would not always report unanimously.

Little Rhode Island, so often a leader in reform movements, has in this matter of medical testimony again blazed a trail for other States. On a number of occasions during the last two or three years a judge by agreement of counsel has appointed an impartial commission of alienists to which the question of the mental state of the accused was submitted. The commission was given every facility for the examination of the prisoner, as well as the authority to examine witnesses as to the nature of the unlawful act and the circumstances relating to its performance. The members were allowed to consult together as freely as they wished. In each such case the experts gave to the judge a sworn statement of their opinions. The trial was then begun, and as soon as a number of witnesses had testified sufficient to establish the fact of crime and the connection of the prisoner with it, the members of the commission were asked to give to the jury a clear and simple statement of their opinions concerning the mental state of the accused and concerning the question of his legal responsibility. In all such instances, so far as I am aware, the commission returned a unanimous report. In the first case which we recall, the commission reported that in their opinions the prisoner was sane before, at the time of, and after the execution of the crime, and that he was legally responsible for his act. The trial was brief, the jury promptly returned a verdict of "guilty," and the prisoner received sentence. The judge and both opposing attorneys expressed satisfaction with the thorough investigation and unbiased opinion of the commission. Counsel for the defendant moved for a new trial on technical exceptions; this was denied and the prisoner is now serving a twenty year sentence.

In the second case, the commission found the prisoner to be an imbecile, the subject of epilepsy, and did not believe that he should be held criminally responsible for his act. They declared that his mental defects and disturbances were incurable, and recommended that he be placed for the remainder of his life in the custody of a hospital for the insane. Both attorneys expressed their willingness to abide by the decision of the commission. The judge, however, in his charge to the jury, laid stress upon the hesitancy of the commission to declare that the prisoner had no knowledge of the difference between right and wrong, which, according to his interpretation of the law of the state, formed the standard for deciding as to the criminal responsibility of the accused. Curiously enough, and to the great surprise of all, the jury returned in twenty minutes with a verdict of "guilty." Though there was clearly a miscarriage of justice in this case, it is not certain but that the jury would have come to the same conclusion had the medical

testimony been presented in the usual partisan manner by experts retained by each side of the controversy.

What enormous expense would have been saved for the City of New York, and for Thaw's estate, had the question of his mental state been submitted to a competent non-partisan commission of alienists. The prolonged legal wrangle would probably have been avoided to a large degree; both law and psychiatry would have emerged with cleaner hands; while the probability would have been infinitely greater that to Thaw himself would have been meted out adequate justice.

The writer is persuaded that the dignity of the law, the cause of justice, and the status of medico-legal jurisprudence in America would be advanced by relieving jurists, and even juries, from the responsibility of deciding as to the mental condition of persons whose legal accountability is held in doubt by reason of possible or probable mental derangement or defect, and by placing the burden of such judgment upon men whose life-study and experience renders them eminently fit for the task.

How much the physician should have to say concerning the legal responsibility of the accused is another question. In the view of many high authorities the physician's task is ended when he has given a clear and concise opinion to the judge and jury concerning the defendant's mental state, it being the duty of the jury alone to decide whether this mental state be such as to relieve the prisoner from the responsibility for his acts. It is, of course, not proper that the alienist should usurp the office of judge and jury; the writer believes, however, that the expert could give still further aid by presenting an opinion as to the degree in which responsibility is affected by the mental disturbance.

We are already taxing nearly to its limit the place allotted for this epitome. We have thought, however, it might be of some profit to speak of the state of medico-legal affairs in America at the present time, believing the moment particularly opportune in view of the present world-wide discussion of the subject. We have been greatly interested in the recent British agitation concerning medical jurisprudence, and the next number of the *American Journal of Insanity* will contain a letter from France, written by Victor Parant, in which there is a highly interesting comparison between French and American medico-judiciary customs. Unfortunately, we have little space in which to discuss more cheerful aspects of our specialty. There has been great activity in American psychiatry during the past year. We have been fortunate enough to receive visits from several eminent foreign physicians, notably, Dr. Pierre Janet and Professor H. S. Fraenkel. Dr. Janet has given, in Boston, two courses of lectures on hysteria, and has also lectured and read papers in New York and Philadelphia. Professor Fraenkel gave a demonstration of his methods in Boston, and also read a highly interesting paper before the Boston Society of Psychiatry and Neurology, relating the history of the development of his method of movements which has become so well known and has been used with such success the world over. He also gave demonstrations in New York and Philadelphia.

Many valuable and interesting papers were read at the meeting of the American Medico-Psychological Association in June, and we are all



looking forward hopefully to the annual meeting to be held in Washington during the coming May.

It was our original intention to refer somewhat in detail to the newer work in neuro-pathology, particularly that of Dr. Barrett and Dr. Southard. We would gladly have spoken also of recent advances in clinical psychiatry as exemplified in the writings of Dr. Adolf Meyer, Dr. Farrow, Dr. Franz, and many others. It would have been a pleasure to have devoted a paragraph to the later opinions of our "grand old man," Dr. Edward Cowle, who, though a pioneer in American psychiatry, has been spared to point the way to vast fields as yet untouched by the reaper's scythe. But all this, though not another story, must remain untold till time shall have given us another opportunity.

(<sup>1</sup>) *Criminal Responsibility*, Charles Mercier, M.B.

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## FRANCE.

By Dr. RENÉ SEMELAIGNE.

*The unity of human neuro-biology.*—Professor Grasset, of Montpellier, President of the XVI Congress of French Alienists, held at Lille last August, devoted his presidential address to the study of the unity of human neuro-biology. At the annual congresses in France, those who devote themselves to insanity or neurology are grouped together. For far too long have physicians thought as common people, and carefully separated diseases of the mind from diseases of the body; but it should be understood that alienists and neurologists study diseases of the body. They are aiming at the same mark; they have the same wish, *i.e.*, to know the normal and morbid working of the nervous system, to keep society from a progressive invasion of nervous disease, and to cure, or at least to relieve, the latter. The statues of Pinel and Charcot, erected first at the gate of the Salpêtrière, seem to represent a symbol of such fruitful union which is splendidly realised inside of that glorious temple consecrated to neurologic science. Alienists and neurologists do not work in different ways; their sciences have the same object, the same method, the same purpose, consequently they do not constitute two sciences, but one.

(1) *Psychiatry and neurology have a similar object.*—By its etymological definition, psychiatry seems to monopolise the study of psychological symptoms, and to be quite separated and distinct from neurology, which comprises merely nervous disorders. But psychical, motor, or sensorial functions are nervous functions; one can find psychical symptoms in many of the disorders especially studied by neurologists, and many people suffering psychical disorders are not insane; consequently there is no essential difference between the object of psychiatry and the object of neurology. No one would deny that there is some difference between the two sciences, but such difference exists between two chapters of a book, two branches of a tree, so between the two aspects of a great science, the human neuro-biology. The psychical,

motor, and sensorial organs constitute parts of the nervous system. That nervous system is one, and the study of its working or of its disorders forms the common object of both psychiatry and neurology.

(2) *Psychiatry and neurology have the same method.*—At first such a proposition seems a paradox, for it is commonly said that the neurologist's reasoning is anatomical, and the alienist's is physiological. But the anatomical work of the alienists is considerable. Besides, a psychological reasoning must be the unique and general method for all—neurologist or alienist—who study neuro-biology. The general clinical *syndromes*, constituting what we call diseases of nervous system, are really not characterised by their own lesion, but by that part of the nervous system which is affected. Clinical unity in the nervous system is not the geographical unity of the anatomist, but the functional unity of the physiologist. The function produces and determines the organ, consequently the unity of a nervous organ is constituted by its function and its centre, and one might consider the nervous system as divided into various organs—such as an organ of mind, a sensitive motor organ, organs of orientation and equilibrium, of language, of sight, of hearing, of taste, of smell, of circulation, of nutrition, etc., each of these organs being composed by elements which might be disseminated through the old anatomical divisions of nervous system—such as brain, spinal cord, nerves, etc. All these organs are to be studied in a similar way. One has to analyse the normal working in healthy people and the abnormal working in sick people to verify at the *post-mortem* examination the position of the lesions producing the observed disorders in the working of the organ, and from such anatomo-clinical comparison to ascertain the exact use of that part of nervous system in the general life. The fruitful method, entirely founded on the psychological reasoning, is in a same degree indispensable in that study of the nervous system, whatever is the especial organic conclusion of such investigation. Consequently, the bonds between psychiatry and neurology will be drawn closer by the unity of method, as well as by the unity of object.

(3) *Psychiatry and neurology have a same purpose.*—In reality, all those who study the nervous system have a same purpose, *i.e.*: (a) To cure, or at least to relieve, people suffering from nervous disease; (b) to protect society against an invasion of nervous diseases, or against the misdeeds of such patients; (c) to increase our knowledge of the nervous system in normal and pathological states.

Psychiatry and neurology, therefore, do not form two sciences, but only one, *i.e.*, the physio-pathology of human nervous system or human neuro-biology.

*The senile brain.*—According to Dr. André Léri, of Paris, old age and senility are not synonymous, old age meaning the last period of a life, and senility being a pathological state, most common amongst old people, but which appears much sooner or much later than the beginning of old age. There is a previous and a late, a general, and there are local senilities. One might not find a senile organ, and especially a senile brain without lesion. The lesions consist in: simple or degenerative atrophy of parenchymatous elements, proliferation, more or less localised, of interstitial elements, and sclerotic disorders of blood-vessels

The author successively studies : (1) The brain in its external and internal aspect, and its three kinds of diffuse lesions which affect the nervous tissue, neuroglia, and blood-vessels ; (2) the small focal lesions of the senile brain, such lesions being of two kinds, *i. e.*, *lacunes de dés-intégration* from a vascular origin, and *état vermineux*, or cortical ulcerations, digging like a coin into the convolutions, but generally not further than the grey tissue ; (3) large lesions in foci (softening and hæmorrhagia).

As the anatomical as well as clinical investigation bring into closer union senile changes and prolonged intoxications, Dr. Léri concludes that his observations are a new argument in favour of the opinion which considers senility, in the brain or in other organs, as the ultimate condition of all the intoxications of life.

*Cytological, bacteriological, and experimental study of the blood of the insane.*—According to Dr. Maurice Dide, of Rennes, alkalinity decreases in the toxic cases, such as mental confusion, early dementia, pellagra, and epilepsy at the commencement of an attack. Mineral elements show quantitative variation accordingly to the general rules of physiological pathology. The increase of urea is slight in the intervals of epileptic fits, and very considerable during the attack. In early dementia periods of excitation are accompanied by a slightly increased resistance of red corpuscles, and periods of stupor offer an inverted formula. In the fits of epilepsy, there is a diminution of resistance, while in other mental diseases, and especially in melancholia, the resistance is normal. Generally there is *hypoglobulie* in toxic cases, and *hyperglobulie* in maniacal states. Transient crises of *hyperglobulie* appear during the attacks of epilepsy ; a diminution of hæmoglobin is usual, but there is an increase on the commencement of a fit.

*Polynucléose* with *hyperleucocytose* is observed at the outset of toxic psychoses and in states of agitation ; the *mononeucléose* with a slight *hypoleucocytose* seems to be the sign of a definite failing of resistance of the organism to a long toxic infection.

After much micro-biological, chemical, and physical researches on serum, the author studies hæmatology in its relationship to heredity. Morbid heredity is unquestionable, but not sufficient to produce delirium or epilepsy ; another cause, a *toxæmia*, is necessary. Dr. Dide thinks that a more complete knowledge of the blood might allow of a more definite prognosis of hallucinatory psychoses.

*Cases of motor aphasia without any lesion of Broca's convolution.*—Dr. Pierre Marie, of Paris, stated at the *Société Médicale des Hôpitaux*, last July, that motor aphasia is often observed without any lesion of the third frontal convolution, and that the lesion mentioned as characteristic of aphasia is equally verified when no special symptoms have been observed during the life. Following many anatomical examinations he was able to conclude that the centre of language is placed in the zone of Wernicke, at the *pli courbe* and the first temporal convolution ; and that the aphasia of Broca, or motor aphasia, does not exist without a lesion of the *nucleus lenticularis* or of *nucleus caudatus*.

During the months of November and December, he presented new cases, with *post-mortem* examinations. A man, following a fit, had shown right hemiplegia and general motor aphasia, and remained eight months

without speaking, but being able to read, to write, and to understand everything. The lesion was localised in the lenticular area of the left hemisphere. Two other cases of motor aphasia, one without dementia, the other with agnosia and dementia, presented lesions of the temporal convolution and of the lenticular zone, without any lesion of Broca's convolution.

Dr. Souques also presented the brain of a young female patient who, suffering from mitral stenosis, was suddenly taken with an apoplectic seizure and motor aphasia; she subsequently died from pleuro-pneumonia. The *post-mortem* examination showed a single focus of softening in the left hemisphere, which had destroyed the posterior part of the two first temporal convolutions and reached the posterior and external part of the lenticular zone. Broca's convolution was intact.

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## GERMANY.

By Dr. JOHANNES BRESLER.

IN my previous reports, I have mentioned the efforts made in Germany for establishing sanatoriums for patients of the lower classes suffering from nervous diseases. I can now state that a third sanatorium has been erected at Roderbirken, near Leichlingen (Rheinprovinz); the medical superintendent is Dr. Beyer. The two sanatoriums already existing, Hans Schöfnow, near Berlin, and Rasemühle, near Göttingen, have shown by their activity during several years the full purpose of their existence.

At the University of Greifswald, a new psychiatric clinic has been established, and at Johnnisthal, near Türktelu, in the Rheinprovinz, a large general provincial asylum has been erected.

In the larger cities, there is more and more the tendency to erect asylums for their insane (at least the curable), instead of using the country asylums. I mention, for instance, the establishment of the city asylums of Chemnitz (Saxonia), Stuttgart, and Nürnberg.

The efforts to propagate psychopathic knowledge amongst non-medical laymen have been continued. For example, at Giessen, in the psychiatric clinic of the University, a course of medical psychology with regard to the treatment and education of the congenitally feeble-minded took place from April 2nd to 7th, 1906, and was attended by more than 100 persons, teachers, clergymen, and physicians. Professors Sommer, Weygandt, and others read papers and gave demonstrations.

The usual meetings of alienists and jurists have taken place during the past year. The detailed reports of some of these societies will be found in the *Juristisch-psychiatrische Grenzfragen*, edited by Finger, Hoche, and myself.

In the second half of April, 1907, an international course of medico-legal psychology and psychiatry will be given at Giessen for physicians, jurists, and officers of prisons and houses of correction, etc. Lectures will be given by the Professors Sommer (Giessen), Aschaffenburg, Dannemann, and others.



On the other hand, our alienists are endeavouring to enlarge their knowledge of other branches of medical science. For this purpose, courses for the further education of the physicians of asylums in medicine, surgery, hygiene, pathological anatomy, bacteriology, etc., have been arranged at the request of the German Society of Psychiatry. The first course, lasting three weeks, took place at Berlin in autumn, 1906. It was very well attended. The cost was defrayed by the Asylum Boards.

To prevent the feeble-minded, or persons of an insufficient psychological resistance, from being levied for service in the Army, the Ministry of Prussia has decreed that the discharge of any juvenile insane or feeble-minded out of the asylums shall be notified to the recruiting agencies.

Finally, I regret to communicate that in the asylum of Hofheim (Hessen) in December, 1906, a physician and an attendant were shot dead by a patient. The patient (suffering from phthisis) had not shown any delusional or persecutory ideas for a long time, and was about to be discharged. During a leave of absence, he furnished himself with a revolver and brought it secretly into the asylum. His physical health grew worse, also his mental state; he was therefore ordered to be transferred to another ward, and upon the discovery of the revolver, he shot the medical officer and attendant who wished to take it from him.

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## ITALY.

By G. E. FERRARI.

DURING the year 1906 the activity of our principal centres of psychiatric science (Torino, Reggio Emilia, Firenze, Roma, Napoli, etc.) has been as remarkable as usual, and the principal reviews of our speciality—we are pleased to mention particularly *Rivista di Patologia Nervosa e Mentale*, edited by Professor Tanzi—bear witness to it. However, among so many excellently written works, no one publication of such exceptional merit, or rather, so representative of the progress of any one school, has been found as to warrant us giving a special account of it in our annual review. Perhaps this is due, to some extent, to the fact that psychiatric centres, both great and small, have concentrated their attention on the asylums, specially in relation to the new Lunacy Law, of which we have already spoken in a previous letter. The question is, in truth, of a law riddled with imperfections, obvious at once when brought into practice, but which has given a new dignity to the asylum doctor in obliging the County Councils to provide for the upkeep and personal safety of every mentally-afflicted individual. The result is that doctors have now the right to demand from the Councils for the well-being of the sick that which only a short while ago had often to be asked as a favour, even if it remained within the limits of the Provincial balance-sheets. As a further result we now see new asylums built on the best lines, and in the existing asylums we find the doctors applying themselves to improve them as much as possible, to train the staff of

attendants, to discuss questions of professional technique, etc. If, then, we owe the silence of so many in the strictly scientific world to this work, which has for its object the improvement of the internal conditions of the asylums for the still greater well-being of the inmates, there is reason, perhaps, to welcome rather than regret it.

A comparative uniformity in the working of the different asylums will be an additional benefit following the adoption of the new Lunacy Laws. The Supreme Council of Health has instituted a code of regulations governing the asylums. Any special rules have to receive the approval of this body, and they then have the force of law for the asylum for which they are designed, but they must conform with the code laid down.

Two International Congresses, which will be long remembered, have been held during the year under review—the Congress of Criminal Anthropology (Turin, in May), and that of the Care of the Insane (Milan, in September). The former marked the jubilee of Professor Lombroso, and resulted in the recognition of criminal anthropology as an ordinary subject of University teaching.

The Congress for the Care and Treatment of the Insane should be a landmark in the history of the subject and of psychiatry. The proposition of Dr. Frank, of Zurich, for the foundation of an International Institute destined to establish exactly the causes of insanity, and the most direct and efficacious means to combat it, is especially memorable. The Congress, when held, would be engaged chiefly in discussing the information gained by such an institution, and would form an international committee, which would seek the sympathetic participation of the various governments and the formation of national committees to work under its supervision and general direction.

The different national committees would meet from time to time according to necessity, and each committee would have to report to the successive international congresses on the progress made, and give their results for deliberation as to the direction subsequent investigations should take. The proposition of Dr. Frank was unanimously accepted by the Congress, and the Congress of Psychiatry, Neurology, Psychology, and Care of the Insane, which will be held in Amsterdam from September 2nd to September 7th, 1907, will decide the future of this institution, so simple in its organisation, but so lofty in its humane purpose.

The leading questions of the day in Italy are, as usual, epilepsy and pellagra. As to the latter disease, we must note with approval the support which the government has at last given to the National Committee for combating Pellagra, which sits at Udine, and of which Dr. Antonini is the moving spirit. The struggle against this formidable plague among the working classes of many of our districts would be doubtless assisted if it were possible to bring into practice the discovery of Professor Gofio and his assistant, Dr. Palludino, a discovery which would serve to make clear the first symptoms of pellagra.

This discovery is that of special conditions in the blood of those predisposed to pellagra.

During the year monographs (edited by Vallardi) will begin to appear, which will constitute a "Treatise on Social Medicine," written by Professors Tamburini and Celli.

This treatise will have for its subject, on the one hand, the different problems of the treatment of the insane, epileptics, drunkards, weak-minded, and sufferers from pellagra, etc., of criminal anthropology, of general anthropology, and medical jurisprudence; on the other hand, the hygiene of schools, public buildings, streets, etc.

I have alluded in one of my preceding letters to the "Institute of Experimental Pedagogy," which has been founded by Pizzoli, and is working very well under the auspices of the municipality of Milan. Now the Italian Minister of Public Instruction, with the object of instituting something of the same kind in Rome, has authorised de Sanctis, Professor of Experimental Psychology at the University of Rome, to organise a two months' course of lectures to instruct the masters and mistresses of the primary schools in the elements necessary to judge of the mental capacity of the children of their schools as well as to train the staff of the "Hilfschulen," which it is always a question of instituting for the children who are not actually weak-minded, but who are not able to keep pace with the others because of an arrest (from no matter what cause) in the development of their intelligence. The instruction given in this course consists of lessons in pedagogic psychology, and on the function and education of the organs of sense, etc.

We have already alluded to the school, directed by Montesano, for those masters and mistresses of schools who are intended for institutes for the generally weak-minded children.

Finally, I wish to draw attention to the subject of the sensational publications of Professors Lombroso and Marcelli on so-called "spiritism," although these two eminent professors have only so far published their ideas in the literary or political journals.

Lombroso has been for some time an ardent observer of all metaphysical phenomena, to which he has even dedicated a special portion of his journal *Archivio di Psichiatria*, but during 1906 he has openly taken up his position against the official world which still denies the existence of "spiritualistic phenomena," both physical and intellectual. Up to this time, however, he has not yet brought forward a theory of his own to explain them, although he is busy preparing one.

Morselli, on the contrary, maintains a critical position. He has been making experiments for a long time, and under the best conditions, with Eusapia Paladino, and has convinced himself, to his complete satisfaction, that all the physical phenomena evoked by this celebrated medium are objective.

He has published, in a very important political journal, a critical article on the history and explanatory theories of spiritualism. For his part he does not give any theory, but he shows an inclination to explain the "physical phenomena of Eustacia Paladino" (he clearly limits his judgment to that) by a psychical process analogous to that which gives rise to actual hallucinations.

They would depend on an objectivation of the thought of the medium Eusapia, haunted by auto-suggestions, or suggested by her surroundings in the *séances*.

Morselli is going to publish a volume on this subject. The work of so brilliant and conscientious a savant will, doubtless, be extremely

useful to the progress of science, which will always have uses for all serious contributions.

Italian psychiatry, during 1906, has suffered sad losses. Two young men, especially, who would have done honour to science and the speciality—Obici and Angiolella—died at the age of 35, when they were nearing the end of their zealous work. And among many others we must regret the death of Professor Roncati, Professor of Psychiatry at the University of Bologna, who bequeathed his fortune, of nearly a million francs, to the provincial administration for enlarging and completing the urban asylum which he directed for more than thirty years.

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## Epitome of Current Literature.

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### 1. Neurology.

*On the Pyramidal Tracts of Man [Sulle vie Piramidali Dell'uomo]. (Riv. Speriment di Freniat., vol. xxxii, fasc. iii-iv.) Ugolotti, F.*

This article refers to the much debated anatomy of the direct pyramidal and so-called "homolateral" tracts.

In two previous communications Ugolotti fully expressed his view on this subject; but further investigation has caused him to alter his opinion as to the origin of the homolateral bundle of fibres.

*The direct pyramidal tract.*—Marie and Guillain in 1903 asserted that the difference in extent of the degenerations met with in this column depended on the seat of the primary lesion. If this was situate in the brain proper the degeneration was confined to the inner and posterior margin of Türck's column. While, on the other hand, if the lesion occurred in the cerebral peduncles or in the pons they maintained that the resulting degeneration extended in the shape of an arc, "en croissant," round the anterior margin of the tract. Thus they divided the degenerations found in the direct pyramidal into two distinct types, the cerebral and the mesencephalic, depending on the seat of the original lesion.

The degenerated fibres termed by them "en croissant," and alleged to be characteristic of the mesencephalic type of lesion, took their origin, they believed, from numerous masses of cells in the peduncles, sub-optic region, and the pons in the vicinity of the pyramidal paths, and joined the pyramidal tracts on their way from the cortex.

Ugolotti, in one of the papers previously referred to, strongly combated these conclusions, and claimed that the different forms which the degeneration assumed in this tract varied according to the level at which the cord is examined, and followed the anatomical distribution of the fibres characteristic of each region. Whether the lesion were cerebral or mesencephalic the anterior pyramidal tract preserved the same appearance in degeneration, namely, triangular or rectangular in the cervical, and arc-shaped in the dorsal region. The degeneration as a rule did not extend to the lumbar region, but when it did, it was



represented by a few fibres arranged along the side of the anterior median sulcus.

*The "homolateral" pyramidal tract.*—Ugolotti applies the nomenclature "homolateral" to those fibres of the pyramidal tract which, in cases of a unilateral lesion of the motor centres, are found degenerated in the position of the "crossed" pyramidal tract, but on the *same* side as the primary lesion. Several explanations have been put forward to account for this double degeneration of the crossed pyramidal tracts following on a unilateral brain lesion: that degenerated fibres passed from one tract to the other across the white commissure; that it was the result of compression of the sound by the affected tract at the level of the pyramidal decussation; that the degeneration was propagated at this point by simple contact; that at the point of decussation each pyramid sent down a bundle of fibres into the "crossed" pyramidal column of the *same* side; that it was due to a double crossing of the pyramidal paths, one at the ordinary level, the other at some higher point in the interhemispheric commissures.

In a former article Ugolotti favoured this latter view. He concluded that the double degeneration was the result of the passage of a bundle of fibres from the seat of injury in the motor zone into the opposite hemisphere, probably through the corpus callosum, and that these fibres at the level of the bulbar decussation passed with the crossed pyramidal fibres coming from the uninjured motor centres into the lateral column on the same side as the lesion, forming the homolateral tract. Further investigation, however, has caused him to alter his opinion and to agree with Dejerine and Thomas that the homolateral bundle of fibres is detached direct from the degenerated pyramidal tract at the commencement of the bulb, and instead of decussating pursues a direct course into the lateral column of the same side. That the point of origin of these fibres has not been more frequently detected Ugolotti believes is due to the fact that the fibres are as a rule few in number, and the number that leave the diseased pyramidal path together at any one point is small; at times, however, they originate as a bundle of fibres large enough to be demonstrated with the greatest facility.

The Marchi reaction is the one recommended by the author, who found the Weigert-Pal method uncertain, and suggests that it is owing to its frequent employment that several observers have been led to false conclusions on this subject.

A. I. EADES.

*Contribution to the Study of the Functions of the Frontal Lobe* [*Contributo allo Studio delle Funzioni del Lobo Frontale*]. (Arch. di Psichiat., vol. xxvii, fasc. iv, v, 1906.) Roncoroni.

In this paper, the author records in detail a clinical observation of a traumatic lesion of the prefrontal area, and in connection therewith discusses the question of the functions of this part of the brain. The subject of the observation, a man, æt. 50, addicted to alcoholic excess, but without anything else of special note in his family or personal history, sustained a compound fracture of the left frontal bone nine months before he came under Roncoroni's care. For fifteen or sixteen days after the injury he was unconscious; there was some loss of brain

matter, and portions of the fractured bone were removed. The wound healed without the development of any symptoms of meningitis, and a few days after recovering consciousness the patient was able to resume his usual life; he suffered, however, from some degree of aphasia, and from a more persistent difficulty in writing. Five months after the injury he had an attack of convulsions, probably connected with the renewal of his drinking habits. The position of the cicatrix would indicate that the convolutions injured were the first and second frontal, and in the absence of symptoms referable to the motor cortex it appears likely that there was no extension of inflammatory trouble beyond the area directly damaged.

The persistent disturbances of brain function produced by the lesion are summed up by Roncoroni as follows: Partial verbal amnesia, shown in failure to name familiar objects which the patient recognises perfectly, alterations in the psychic content of what he writes spontaneously, almost total disappearance of mimetic movements of the face, loss of aptitude to perform even the most simple arithmetical operations, failure of volitional energy and initiative. No other alterations in nervous function are observable.

Discussing the case, Roncoroni assumes for the psychic arc the following stages:

(a) Constituting the afferent branch: (1) pure, primary sensations, having their seat in the primitive sensory areas; (2) complex sensations of higher evolution, as, *e.g.*, the symbolic representations in written language.

(b) Constituting the efferent branch of the reflex arc: (1) re-evocation of the psychic image corresponding to the movement required, as, *e.g.*, in speaking it is necessary to associate the several images, visual, auditory, etc., relative to the object, with the verbal image corresponding to it; (2) re-evocation of the sensory image corresponding to the movements required; (3) motor impulse proper. The stage in this diagrammatic view which the author would locate in the prefrontal area, is the third or preparatory process in immediate relation with the more highly evolved motor functions. This theory would explain why lesions of the prefrontal area do not produce either gross disorders of motor function or distinct disturbances of sensation or intelligence, and why also the results of experimental interference with this area are negative.

W. C. SULLIVAN.

### 3. Etiology of Insanity.

*Inquiry into Race and Heredity* [*Ueber Geschlechterforschung und Erblichkeits hygiene*]. (*Allgem. Zeits. f. Psychiat., B. lxxiii, H. 1.*) Lundberg.

Dr. Lundberg has been making some investigations in a quiet district in the south of Sweden where the family history could readily be traced. In the last half of the eighteenth century, the race seemed to have been flourishing, and many of the inhabitants gained distinction, some becoming members of Parliament. At the beginning of the nineteenth

century, the times were hard, the people took to drinking, and symptoms of degeneration began to appear, which were probably intensified by numerous close marriages. Now, a hundred years later, the race is in such a sad condition that it looks as if it might become extinct in some places. Alcoholism and consanguine marriages still prevail. There is still great fertility; it is not uncommon to find from eight to ten children in a family. The parents do not welcome this, and the mothers continue to nurse their infants for two or three years, which, however, does not always act as a preventive. While nursing they sometimes use too much alcohol, and often drink strong coffee adulterated with chicory. During the last ten years, there has been a considerable emigration to America and Australia, and as it is generally the healthy individuals who leave; those of lesser vigour are left behind to continue the race. Dr. Lundberg has noted the tendency in some families to regeneration, and the study of these rising families is of even greater interest than the observation of the degenerated ones. Certain nervous diseases, though unlike in symptoms, seem to have a relation to one another; for example, one frequently finds in the same family the children affected by epilepsy, dipsomania, and migraine. On the other hand, periodic psychosis, chronic mania, and dementia præcox are seldom met with in the same family. To have a well-grounded theory about heredity one must proceed slowly, examining individual after individual, family after family, and generation after generation. For a research of this kind Sweden offers many opportunities. The race is unmixed, speaking only one language; the population is in many places stationary in the country, so that a great many members closely akin may be met with. In many places, the weeds have grown and flourish unchecked, so that they choke the good seed. Dr. Lundberg adds that there are whole states in Europe in which degeneracy takes more and more the upper hand. He does not mention what these countries are, but some German writers have assumed that this is the case with France, of which we think there is no sufficient proof.

WILLIAM W. IRELAND.

*Bischoff on Family Insanities [Ueber familiäre Geisteskrankheiten] (Jahrbuch f. Psychiat. und Neurol., B. xxvi, H. 2, u. 3.) Bischoff.*

Dr. Ernst enumerates as hereditary nervous diseases Freidreich's ataxia, cerebellar ataxia, the family form of spastic spinal paralysis, progressive muscular atrophy, amaurotic family idiocy, Huntington's chorea, and myotonia congenita (Thomsen's). The subject of his paper under consideration is that form of insanity affecting several members of the same family. Bischoff separates induced insanity from those cases where several members of a family become insane. Being under the influence of one another in induced insanity, the derangement often subsides when the secondary member is withdrawn from the powerful influence of the other. He cites instances, where, without any influence of the one brother or sister being exerted upon the other, they become insane often about the same period of life. This sometimes occurs with twins, of which some instances have been cited. In such cases, we are forced to believe that the insanity is hereditary. Vorster and Sioli held that manic-depressive insanity and dementia

præcox succeeded one another through several generations. Later inquiries have favoured the theory of polymorphism or transformation in which the hereditary disposition shows itself through several distinct forms of mental or nervous disease. Bischoff describes insanity in two families, in neither of which was there a marked neurosis in the ascendants, but in the first family four out of five brothers and sisters were insane. In the second family, there were ten children living; of these a son and a daughter, soon after puberty, quite independently of one another, became demented. Two others, males, were affected by the same malady, though in a less degree. The remaining members of the family were sane.

WILLIAM W. IRELAND.

*On the Danger to Posterity of Neurotic Diseases in the Ancestors* [*Die Gefährdung der Nachkommenschaft durch Psychosen Neurosen und verwandte Zustände der Aszendenz*]. (*Allgem. Zeits. f. Psychiat., B. lxiii, H. 3.*) Tigges.

Dr. Tigges, of Dusseldorf, has made an elaborate inquiry into the diseases of the ascendants of the patients received into the asylums of Germany and Switzerland. The cases in which the father or mother were insane he styles direct heredity, where the grand-parents, uncles, and aunts were affected, indirect heredity, and where the sisters and brothers were affected, parallel heredity. He inquired into the number of deaths in these families and the members who remained healthy. These statistics are compared with the history of an equal number of healthy families, and the bearing of the figures very carefully analysed. The information thus obtained has been reduced to statistical tables. Nothing less than a translation of Dr. Tigges' paper would make a fair presentation of his results. In general, it may be said that they give a solid confirmation of the views which have been reached by most experienced physicians, of the frequent transmission of insanity and nervous derangements to the descendants. Those families affected with hereditary insanity have, according to some observers, more children to a marriage, but these children are not so healthy and there are more early deaths. This has been especially shown by Marandon de Montyel, though the evidence has been weakened by the Sachsenberg statistics. Moral defects accompany these neurotic families, and even the sound members often show decided peculiarities. Insanity, even when not inherited, has more tendency to be propagated by descent than any other abnormalities.

On inquiring into the ascendants of drunkards, comparatively few nervous diseases are found amongst the indirect and collateral relations. The proclivity to drunkenness is propagated from the parents in the direct line. The commonest legacy of drunken parents is epilepsy and *delirium potatorum*. There is a tendency in such families to die out in three or four generations. The mortality amongst the children in those families is abnormally great. Legrain has given some striking statistics supporting this.

Certain nervous diseases, especially apoplexy, common organic affections of the brain, and lesions at birth, are not liable to transmit insanity to the descendants; but epilepsy, hysteria, hypochondria, are liable to



beget further disorders. The evil influences of heredity are most marked in general paralysis. Tigges presents a number of these genealogies which show the hereditary transmission of nervous diseases in a striking manner. The following has been given by Jörger: Andreas Zero was born in 1639; both he and his son Ernst married women of the Lauter family. With these two men there was nothing abnormal on record. In the Lauter family, in 1713, one woman became insane and committed suicide. In a branch of the same family two sisters and three brothers were either insane or nearly so. The children of one of the brothers were most erratic—one daughter dull of hearing, besides this one was dumb, one weak-minded, one idiotic, one insane. It was this Lauter family that brought the heredity taint into the Zero family. While the eldest son of Andreas Zero and the youngest of Ernst Zero, by a second marriage, were the progenitors of a flourishing family of from seventy-six to ninety members, the son of Ernst Zero, by his first wife Lauter, Paul Alexius, was the progenitor of an abnormal family. He himself led a vagabond life with his wife. They had six sons and one daughter; from these seven children came a progeny of over 200 vagabonds, drunkards, thieves, prostitutes, idiots, weak-minded, beggars, murderers, infanticides, homicides, besides a series of lunatics, epileptics, paralytics, many squinting children—in one family eight of them. The feeble-minded members married several times and had a large number of children, amongst whom the mortality was great. Some of the children of the Zeros were boarded into private families, without any benefit.

Assuming that there is in the general population one insane person for 250 inhabitants, it would be only those who are married, widowed, or divorced who could give opportunities for hereditary transmission to their descendants; these constitute about 50 *per cent.* of the admissions into asylums. This proportion must be lower in the population outside, as the idiots form one half of the total insane, and it is only the more intelligent imbeciles, about 10 *per cent.*, who become married. We have thus to reckon with one insane person in the 500. If these abnormal persons had the average number of children as the sane, the proportion would be 0.2; instead of this the direct cases of insanity in German asylums give us 10 to 11 *per cent.* of insane children. Calculated at 10 *per cent.*, the incidence of insanity with those who have a direct hereditary predisposition is ten times 0.2, equal to fifty times more insane persons than occur in families without hereditary predisposition.

WILLIAM W. IRELAND.

*On Nervous and Psychological Injuries through Electrical Discharges from the Telephone.* (Allgem. Zeits. f. Psychiat., B. lxiii, H. 1.) Kurella.

Dr. Kurella described to the Psychiatric Society of the Rhine provinces seven cases which he had observed from 1900 to 1904 in which mental or nervous injuries had been experienced by professional telephonists. Five of these cases were owing to high electric discharges from the telephone, three being from a strong electric current and two of them through an atmospheric discharge. None of these cases ended

fatally, but in one there was atrophy of the muscles affected in the left arm. Kurella cites other observations, going to show that multiple sclerosis and an affection like general paralysis has been occasioned by the discharge of an electric current from the telephone, in opposition to Gellinek, who treated such injuries as of nervous or mental character. Kurella contends that the strong currents used have actually caused physical lesions of the heart and nerve tissues, especially small ruptures and hæmorrhages.

Kurella's paper, which has been published in a separate form by A. Barth, Leipzig, led to a discussion in which Dr. Hoffmann argued that these effects following the use of the telephone were of mental origin. Steiner sustained Kurella's view, but he does not consider that lightning passes through the telephone wire. There was a little epidemic in Cologne in which many telephonists suffered injury, but there was no thunderstorm at the time.

WILLIAM W. IRELAND.

### 3. Clinical Psychiatry.

*Contribution to the Clinical Study of the Pharyngeal Reflex* [*Contributo allo Studio Clinico del Riflesso Faringeo*]. (*Annali dell Istituto Psichiat. della R. Univ. di Roma, vol. iv, 1905.*) Forlì, V., and Guidi, G.

That the pharyngeal reflex is not by any means a constant phenomenon is very well known to users of the laryngoscope.

The authors of this paper first examined 98 subjects free from any nervous disorder, with the object of finding out the influence of age on its appearance, with the following interesting results :

In the subjects under fifty the reflex was well marked in nearly 50 per cent., absent in 15 per cent., and feeble in the remaining 35 per cent.

In those over fifty, it was well marked in 40 per cent., absent in 31 per cent., and feeble in the remaining cases.

They next give the results of examination of 331 cases suffering from some functional or organic form of nervous disease. Most notably in hysteria, and to a lesser extent in hysteroid neurosis, was there a great alteration in its exhibition.

Kattiwinkel, in a recent publication on the same subject, gave the results of his examination of 104 cases of hysteria. In 100 of these the pharyngeal reflex was abolished. He at the same time noted that the pharyngeal sensations of touch, temperature, and pain, were unimpaired, and deduced from this that the abolition of the reflex for nausea did not point to anæsthesia of the mucosa, as was generally held, but was a sign of interruption of the reflex arc, and of cerebral origin.

The authors' experience in their hysteria and hysteroid cases was very similar, more especially in the graver forms of hysteria. In epilepsy, also, the absence of the reflex was frequently noted, and that this was not due to the bromides was proved by control experiments. The same results were found in neurasthenia. In patients suffering from tabs and chronic alcoholism, there was little apparent alteration, and the same applied to the early forms of general paralysis. In the

later stages of the latter disease, however, the reflex was very frequently absent, as also was the case in cases of cerebral tumour.

In cases of hemiplegia, the reflex was much weaker on stimulating the pharynx on the paralysed side.

The authors hold that these facts confirm Sahli's hypothesis that all the "complicated" reflexes, such as nausea, should be considered as cortico-nuclear, and hence may be altered by any lesion of the cerebral cortex.

They think, in conclusion, that their researches show that the alteration of the reflex is not the result of a morbid condition of the motor-paths, but is due to some lesion of the centripetal branch of the reflex cortical arc.

A. I. EADES.

*Research on the Blood-pressure, Pulse, and Temperature in Epilepsy*  
[*Ricerche sopra la Pressione Sanguigna, il Pulso e la Temperatura degli Epilettici*]. (*Riv. Speriment. di Freniat.*, vol. xxxii, fasc. iii-iv.) Besta, C.

The author finds that the blood-pressure is raised in a large percentage (63 per cent.) of the epileptics he examined, but experiences a difficulty in giving an exact explanation for this. He was able to exclude any direct pathological cause, as cardiac or renal disease. The pressure-curve was extremely irregular. It was not modified by the number of fits, nor by the mental or physical condition of the patient; in those cases where the pressure previously happened to be above the normal, after the fits no lowering or return to the normal occurred. Many writers maintain that the epileptic convulsions represent an attempt on the part of the organism to eliminate the convulsive toxins circulating in the blood, and that the toxic power of the blood is greater before the fit occurs, while the opposite holds good of such secretions as the urine or sweat. If this were so, it would be expected that after the fits there should be a return to the normal of the organic functions, such as the circulatory system, more strictly in connection with the disease. That this is not so is shown by the continued high blood-pressure in those cases where this obtained before the onset of the convulsions.

As regards the chemical condition of the urine after a series of fits, there is much difference of opinion. While some authors hold that its toxic properties are much increased, others contend that the experimental results obtained are too inconstant to be of any real value.

The results of the author's experiments on the state of the blood-pressure before the onset of the fits are worthy of note. In no case was there any modification of the general blood-pressure preceding an epileptic seizure, which shows, in his opinion, how different is the mechanism here involved from that occurring in a uræmic attack, which is always characterised by vaso-constriction and marked rise of arterial pressure.

The pulse rate had no direct relationship with the state of the blood-pressure; nor was it modified by the epileptic convulsions, except that it was increased temporarily during these. Like the blood-pressure it followed no regular course, but each case showed some distinctive peculiarity. There were frequently variations in its pulse-rate of from 30 to 40 per minute without any appreciable cause, quite independent

of digestion or sleep or emotions, which frequently affect the pulse-rate of normal individuals.

As regards the temperature changes present in epilepsy, the author is in complete accord with the results obtained by Ceni. He, however, has never found the temperature fall below  $35^{\circ}\text{C}$ . In 66 *per cent.* of the cases examined the temperature was found to be subnormal, and this more frequently among women than men. The hypothermic crises varied in duration, at times lasting from eight to twelve hours, or even longer, and had no connection with the number or intensity of the fits, or with the variations in blood-pressure or pulse-rate previously referred to.

The author has shown that all these modifications of the blood-pressure, pulse-rate, and temperature pursue an autonomous course, and are independent of the cortical manifestations of epilepsy. He maintains that this disproves the theory that the alterations in function of the central nervous system represent an organic reaction to eliminate toxins from the circulation. He holds the belief that in epilepsy we have to deal with an irritant that is continually acting on the central nervous system, to which the nerve-centres react quite independently of one another.

The cortical reaction manifests itself in the classical signs of the disease—fits, and alterations in the psychical state; while the alterations in blood-pressure, pulse-rate, and temperature are the results of the action of the same irritant, be it mechanical or toxic, on the bulbar centres.

A. I. EADES.

*On Agrammatism and Derangements of the Inner Speech* [*Ueber Agrammatismus und die Störung der Inneren Sprache*]. (*Archiv f. Psychiat. u. Nervenkrank.*, Bd. 41, Heft 2.) Heilbronner, K.

Agrammatism may be regarded as an approach to aphasia, consisting in a loss of the power of constructing correct sentences. Dr. Heilbronner, of Utrecht, describes a case of this kind. A young man had received an incised wound in the left temporal region, which was followed by loss of blood, and unconsciousness which lasted for four weeks. After this time he began to speak, but with difficulty. He was received into the Psychiatric Clinique at Halle, where he was under observation for fourteen months. On admission there was noted right facial paralysis and deviation of the tongue, with spastic paresis of the right side. He wrote with the left hand with much readiness. In the ward he spoke little, and with difficulty, as if he had some mechanical stop. Although he had a sufficient vocabulary and understood complicated sentences, he used ungrammatical phrases in speaking as well as in writing, like the pigeon English spoken by the Chinese, or the Hindustani attempts of the British soldier, which are mostly in the imperative. Specimens of his composition are given in the descriptive paper, filling thirty pages. The author presents at the end the following conclusions: (1) Agrammatism can follow a slight motor disturbance of speech; (2) it can continue for years, even under conditions which favour the recovery from the symptoms of aphasia; (3) agrammatism with aphasias is not necessarily connected with mental weakness;



(4) agrammatism with motor aphasia is not a secondary result of the motor speech deficiency, but a distinct affection; (5) a considerable degree of agrammatism may be combined with a slight loss of the apprehension of small sentences and their import, perhaps without any loss of this apprehension; (6) the result of a slight motor disturbance may injure the construction of sentences more than the inner apprehension of spelled words; (7) in agrammatism the injury to the power of expression as shown in writing is greater than the loss of the receptive power in reading; (8) the power of finding the right word can, notwithstanding the loss of fluency in speech, remain intact in agrammatism; (9) the recurrence of the same fault in the analysis of words observed in experiments repeated at different times justifies the hope that some law and order may be yet discerned in pathological derangements of speech.

WILLIAM W. IRELAND.

*On Defective Children* [*Leicht Abnorme Kinder*]. (*Allgem. Zeits. f. Psychiat., Bd. lxii, H. 4.*) Thoma E.

Under this title Dr. Thoma, of Illenau, Baden, considers the case of children weakminded or under the burden of nervous diseases, excluding the graver forms of imbecility, idiocy, and cretinism, as well as severe and recurrent epilepsy. Above these there is a grade of children who have recently come into notice owing to the establishment of schools for pupils of deficient intelligence in some of our large towns. Dr. Thoma treats these cases under the heads of neurasthenia and hysteria. Emminghaus has described the first of these affections in children as a neurosis of the cerebrum, with some weakness of the intellectual faculties, alteration of the temper, and anomalies of innervation. It may be acute or chronic, often coming on suddenly, and showing itself in great listlessness and the loss of the usual brightness and playfulness of children. In the school, they are inattentive, learn with difficulty, and soon lose what they have been taught. The pupils are wide and react readily, the conjunctiva is injected. There are a great variety of other symptoms, such as flushing of the face, bleeding at the nose, cold hands and feet, feeling of heat in the head, noises in the ear, palpitation at the heart, and dyspnœa. The sleep is bad, with night terrors. As all these symptoms do not occur in one case, it is difficult to give a general description. Sometimes there is only a single symptom to guide the physician. Characteristic of neurasthenia in children are what is called the phobias, terrors easily excited by slight causes, such as monophobia, the fear of being alone, or the fear of some animals, as spiders, mice, or toads. Thoma mentions one case of a woman, æt. 22, who, on the occasion of a search being made in the school for some stolen chocolate, was ever after haunted with the idea that she should always have with her some friendly person as a witness of what she did. Against this weakly yielding to dominant ideas, the author prescribes a careful diet, withdrawing the child from pressure at the school, gymnastic exercises, and manual work; as medicines, he recommends valerian and the bromides. Such children are often affected by what the French call *Tics convulsifs*, uncouth or jerky motions, such as winking, shrugging the shoulders, hawking, snorting, biting the lips or

the nails, and plucking the skin. These are often treated as simply bad habits, whereas they may indicate a deeper neurotic affection. Such children at school are often inattentive and absent-minded, even when they do not fail in intelligence. In the graver forms, they are restless and disorderly, prone to cruelty and stealing. When they grow up they may become vagabonds and prostitutes.

The most recent description of hysteria in childhood and youth is given by Bezy and Bibent. Symptoms of this affection in early infancy are often ascribed to dentition; often they commence with only one symptom which would be regarded as a warning signal. Amongst these are the starting of the muscles of the face, movements of the eyes, stuttering, pain in the breast, cramp in the stomach or vomiting. Thoma, during the past year, has seen two cases of hysterical dumbness following upon disorder of the bowels. The author remarks that the best prophylaxis would be to forbid marriages between neuropathic persons, but as this is seldom practicable, treatment should begin as early as possible. He recommends residence in the country, cold baths, careful diet and exercise, avoiding all severity in teaching. In some cases he has seen advantage from hypnotic suggestion. Sometimes the hysterical fits are very severe, coming on suddenly, and changing the whole character of the child. There is movement of the hands, sudden redness of the face, grimaces, stretching out of the tongue, roaring, and other distressing symptoms. Choreic motions are common with hysterical children; more frequent with girls than with boys, in the relation of three to one. Thoma would have physicians to inspect the schools, discriminate the cases, and withdraw such pupils as need a special education or give directions how they should be treated; their capacity for sustained application without weariness should be especially tested. He cannot recommend schools for idiots as good for children of merely weak capacities. For this class, small special schools are the best if the parents are able to bear the cost. He recommends massage, gymnastics, Slojd's work. Hydropathy is sometimes useful. Prophylactic measures are advisable against possible attacks of insanity or epilepsy.

WILLIAM W. IRELAND.

*On Subcortical Sensory Aphasia [Ueber Subcortical Sensorische Aphasie].*  
(*Jahrbuch f. Psychiat. und Neurol., B. xxvi, H. 2, 3.*) Bonvicini.

Dr. Giulio Bonvicini has, in an article of above one hundred pages, given a complete survey of the information about sensory cortical aphasia. When this form was conceived by Lichtheim, on theoretical grounds, he was only able to produce one case in support. In his view there were lost the understanding of spoken words, the capacity to repeat words, and to write to dictation, while there were retained spontaneous speech and writing, the understanding of writing, and the power to read aloud. Thus the whole inner speech apparatus and the understanding of words are intact, while the comprehension of spoken words is suspended, the hearing being unaffected.

Bonvicini presents a case of this affection carefully studied. A man, æt. 63, previously healthy, with no affections of the hearing, had sensory aphasia, which quickly passed away in the reverse order—the word-

deafness, then the paraphasia, then the bad grammar, lastly, the difficulty of finding the proper words. A second attack, with symptoms of left-sided hemiplegia, again brought back these speech disorders, which again subsided, leaving behind a persistent word-deafness. The description of this case occupies thirty-five pages, in which the whole power of language and appreciation of tone are most carefully analysed.

Bonvicini presents the following conclusions: Word-deafness may be caused both by peripheral and central lesions affecting the middle ear, the labyrinth, both acoustic nerves, and the nerve-tracts leading to the cortex, as well as of the auditory zones at both sides of the brain. In all these cases we have to do with a false, sensory, acoustic word-deafness which is different from the pure speech-deafness described by Wernicke and Lichtheim. If, on examining the power of hearing, one finds a sufficient perception of tones, he may conclude that the word-deafness is independent of a general impairment of hearing, and if the power of repeating words and of writing to dictation be lost, while the spontaneous use of the voice, reading, and writing remains intact, we have the clinical form of subcortical sensory aphasia.

The cause of this pure word-deafness lies either in a one-sided affection, when a lesion in the white matter of the left temporal lobe occasions a sub-cortical interruption of the auditory projection path and of the connection of the auditories' spheres through the corpus callosum, or it consists in an affection of the temporal lobe on two sides of the brain, which disturbs the paths without injuring the cortex. We can only cite two instances of sub-cortical sensory aphasia from a unilateral lesion—Liepmann's case, of which we have the anatomical investigation, and the case described by van Gehuchten and Goris, which went no further than clinical observation. We cannot produce from the literature of the subject a single unimpeachable instance of word-deafness of bilateral origin, for the cases hitherto presented as such either fail in the symptoms of pure word-deafness or are attended by difficulties of speech which seem capable of hindering the apprehension of speech. Bonvicini considers the case described by him, although the anatomical confirmation is wanting, to be the only one where the symptoms of sub-cortical sensory aphasia are decided and uncomplicated. They have persisted unaltered for years, and the tests show a scarcely appreciable diminution of hearing. Heretofore the cases of word-deafness examined by Bezold's method have all shown an equal though slight impairment of the perception of tone in all the octaves of the scale.

WILLIAM W. IRELAND.

*Upon the Influence of Mental Processes upon Metabolism* [*Ueber den Einfluss psychischer Vorgänge auf den Stoffwechsel*]. (*Allgem. Zeits. f. Psychiat.*, Bd. lxxii, H. 3. Rosenfeld.

In a paper of above thirty pages Dr. Rosenfeld considers this subject both in its physiological and pathological aspects. He cites the labours of many investigators, from which it appears that it is difficult to prove that the quantity of blood in the brain is increased in mental activity. In nerve-tissue the changes are small and the restitution is speedy.

The difficulty of separating the share of the excretions from the total furnished by the muscular and nutritive activities is too great to allow of a definite conclusion. Rosenfeld observes: "It has not been shown that the chemical changes in the brain, which are not necessarily processes of oxidation, have a recognisable influence upon common metabolism, nor can it be proved that the changes in the composition of the urine noted by some inquirers are the direct result of these chemical changes."

Rosenfeld then goes on to inquire whether alterations in the composition of the urine have been found to follow pathological conditions of the brain.

He cites many investigations by various authors; amongst others Koppen has constantly found albuminuria in acute deliria and sometimes propepton. The specific gravity was about 1030, but there was no constant relation between it and the quantity of albumen. Albuminuria was in delirium tremens and other cerebral disorders. Peptonuria has been frequently observed in general paralysis, but in this disease Rosenfeld has neither found this nor albuminuria constant. Tuzek could find no albuminuria in insane patients during periods of abstinence, and Schäfer failed to find it in circular insanity. Acetonuria has been observed in some cases of paralysis and other mental derangements, probably the result of low nutrition. Glycosuria has been frequently observed in insane patients, but not in any special form of insanity. Raimann has made inquiries into the assimilation of sugar in different forms; he has experimented on the assimilating power shown by the appearance of glycosuria after the administration of so much grape sugar calculated upon each kilo of the body weight. In idiocy this assimilative power was calculated at 4.7; in maniacal patients it was from 3.9 to 6.6. In acute confusional insanity from 2.7 to 1.4, and in melancholia from 1.2 to 1.9. This low grade in melancholias he regards as owing to the slowness of the vital processes.

WILLIAM W. IRELAND.

*Mental Degeneracy* [*De la Dégénérescence Mentale*]. (*Rev. de Psychiat.*, October, 1905.) Marchand.

Morel employed the term "degeneracy" to indicate any departure from the primitive human type, apart from such as resulted in a better adaptation to the environment. He considered its principal character to be hereditary transmission, and that it became progressively more accentuated in the descendants, ultimately leading to sterility. The cause was to be found in various ancestral diseases and intoxications. He classified the cases into two groups: those with physical malformations and intellectual enfeeblement (idiots, imbeciles, cretins); and those with various psychical affections (obsessions, eccentricities, distortion of moral sense, etc.), but without intellectual enfeeblement.

Magnan attaches less importance to heredity. He thinks that all the manifold varieties are reducible at bottom to one psychopathic mode—a failure of psychical equilibrium.

The term "mental degeneracy" is accepted by modern psychiatry, nevertheless it is difficult to apply, e.g., the term. One must recognise



that it groups together disparate states, completely opposed in their anatomical formulæ. This is due to a confusion between degenerate and "abnormal." Every degenerate is an abnormal—but the converse is not necessarily true. Certain abnormalities are not, strictly speaking, suffering from disease—the anatomical basis is simply a deficiency of cerebral tissue without real lesion. In the degenerate, on the other hand, the mode of development often differs completely from the common form. Thus there are degenerate idiots and abnormal idiots.

It is generally taught that whether or no an individual is a degenerate is to be determined by examination of—(1) hereditary antecedents; (2) physical stigmata; (3) mental stigmata. The author, however, does not think that heredity plays the same rôle in mental degeneracy as in insanity proper, nor that degeneracy is necessarily progressive from one generation to another. Individuals without taint arise from degenerate parents, and degenerates occur in otherwise irreproachable families. In these cases some morbid condition of the mother during pregnancy is often an important factor. Charrin and Lévi found numerous spinal-cord lesions, principally hæmorrhages, in the children of women ill during pregnancy. Charrin and Delawarre have also shown in these children the presence of various abnormalities—diminution of the alkalinity of the blood, hypothermia, increased toxicity of the urine, cellular alterations, etc.—which allow a more definite conception to be substituted for the vague word "predisposition." Certain affections of childhood may also cause similar constitutional alterations.

The author, therefore, concludes that the clinical syndrome "mental degeneracy" may sometimes arise from causes to which the term "degeneration," in its generally accepted significance, is not applicable.

BERNARD HART.

*Eschars in General Paralysis* [*Les Escarres dans la Paralyse Générale*].  
(*Rev. de Psychiat.*, October, 1905.) Vigouroux, A.

In general paralysis eschars of various kinds occur—different in their aspect, seat, and evolution. What is their relation to the primary disease?

Till recent times eschars were considered to be trophic affections, forming part of the clinical picture of the last stage of general paralysis. Voisin pointed out that they often occurred in parts not subject to pressure—and opinions have latterly varied considerably as regards the rôle to be assigned to tropic changes and to lack of hygiene. The author considers that this diversity is due to the fact that eschars have been considered *en bloc*, without reference to differences in aspect and position.

*Eschars on the buttocks.*—These sometimes appear as a sequel to a seizure, and are then analogous to the "acute decubitus" described by Charcot in various brain diseases.

*Sacral eschars.*—Less deep, but of greater superficial extent than those occurring on the buttocks. They are usually connected with foci of acute myelitis in the region corresponding to the second sacral nerves. This view is corroborated by the fact that concomitant lesions have been described on the antero-external surface of the leg and the dorsum of the foot—regions likewise innervated by the second sacral.

*Neuritic eschars.*—Due to a peripheral neuritis. If occurring in the sacral region they are difficult to differentiate from the last type. Lesions of this nature have also been described as a sequel of certain abdominal operations in women, and have been proved to be due to a subsequent neuritis.

Chemical and physical agencies (irritation, contusion, pressure) cannot be regarded as the sole causes. Eschars do not occur with the same frequency in patients other than general paralytics, though these may have similar habits, and be treated in the same manner. Similarly, they occur in parts not subject to pressure, and even in patients who are not bedridden.

As regards the trophic factor—are these centres devoted to the nutrition of the skin, or are the vaso-motor centres those chiefly concerned? The existence of the former, upheld by Samuel and Charcot, has been denied by Chantemesse. The vaso-motor theory has been defended by Durante.

The author reaches the following conclusions: General paralytics, as a result of the general alterations in the nervous system, viewed especially in their vaso-motor aspect, are predisposed to gangrenous cutaneous lesions—which occur under the influence of occasional causes (pressure, maceration, local infections, etc.). Eschars of this nature are preventable by antiseptic and hygienic measures. But there are eschars of another type, arising from myelitis and peripheral neuritis. These are apparently independent of the secondary causes above mentioned—and are not preventable.

BERNARD HART.

*Hysterical Laughter* [*Le Rire Hystérique*]. (*Journ. de Psychol. norm. et Path.*, November, 1906.) Ingegnieros, J.

(I) *General psychology of laughter.*—Laughter is not a simple phenomenon, but a complex, and its elements may be combined in various ways. These elements may be divided into three main groups: (a) Expressional, (b) emotional, (c) intellectual. (a) The *expressional element* consists of certain movements of the muscles of physiognomy, together with short expiratory movements, apparently depending on reflex contractions of the diaphragm. In the child, the idiot, and the dement, laughter may be limited to this expressional element, as a phenomenon of cerebral automatism determined by imitation, or as a simple reflex. Such a laugh is a motor phenomenon without psychological significance. (b) The *emotional element* consists in a certain special state of the organism determining an emotion of pleasure. (c) The *intellectual element* consists in a perception of the ridiculous, or laughable in the exciting, idea. It may be accompanied by neither of the preceding elements, and, according to Ribot, is the highest stage in the evolution of the laugh.

(II) *General psycho-pathology of laughter.*—(a) *Pathology of the expressional element*: Here should be placed the spasmodic laughter of hemiplegics, tics, the hysterical laugh, etc.; (b) *Pathology of the emotional element*: cases of dissociation or disproportion between the emotional state and its expression, e.g., the laugh which occasionally

accompanies grief; (c) *Pathology of the intellectual element*: laughter due to morbid logic or morbid perception, obsessions, etc.

(III) *Clinical classification of hysterical laughter*.—It may be divided into two groups according as it occurs: (1) as an epiphenomenon of the convulsive attack; (2) as the sole phenomenon. In the first group, the laugh may occur as an aura, as a complication of the fit, or as a symptom of its involution. In the second group, the laugh may alternate with convulsive attacks, or may altogether replace them.

(IV) *Differential diagnosis*.—One frequently encounters forms of laughter in degenerates, neurasthenics, and psychasthenics, which may cause some diagnostic difficulties. The distinguishing features of hysterical laughter are its irresistible and uncontrollable nature, the fact that the disturbance is limited to one functional centre, independently of the rest of the personality, the subsequent existence of amnesia, and the presence of other hysterical symptoms.

(V) *Treatment by hypnotic suggestion*.—The author describes an illustrative case in detail. After the induction of hypnosis it was suggested to the patient that an attack would be produced by pressure on the temples, and inhibited by grasping the wrist. This was completely successful, and, by a further suggestion, the patient was induced to voluntarily seize her own wrist, and thereby abort the attack. After hypnosis had passed off the same suggestions were repeated in the waking state. Under this treatment the attacks gradually diminished in number, and finally ceased.

BERNARD HART.

*Mental Diseases in Tropical Climates* [*Les Maladies Mentales dans les Climats Tropicaux*]. (XV<sup>e</sup> Congrès International de Médecine, Lisbourne, 1906.) *Moreira, J., and Peixoto, A.*

Medical geography has lost much of the significance which was at one time ascribed to it. Formerly, each region of the earth was supposed to possess diseases peculiar to itself, but this view has been largely dissipated by a better clinical and etiological knowledge. There are, therefore, no essentially tropical mental diseases—we are only entitled to assume the existence of clinical varieties.

In the present paper, tropical regions are understood to be those intervening between the isotherms of 20° C. north and 20° C. south. Most of the observations referred to have been carried out in Brazil.

Esquirol thought that insanity was less frequent in hot climates than in the temperate zones. The authors do not agree with this, nor have they been able to substantiate the view that, in a given district, changes in temperature and in weather produce definite effects in the insane.

As regards idiocy, degeneracy of various kinds, and the senile psychoses, the cases do not differ, either in frequency or in form, from those occurring in Europe. The number of imbeciles amongst the descendants of individuals suffering from ankylostomiasis is very noteworthy. Hysteria is frequent in Brazil, but not more so than in Europe. Occasional epidemics of astasia-abasia have been described. Epilepsy is widespread, and the authors have noted the frequency of alcoholism in the parents. Paranoia, taken in the limited sense employed by

Kraepelin, accounts for 11 *per cent.* of the total cases, while alcoholic forms include 28 *per cent.*—a frequency comparable to that of Paris. The cases assigned to manic-depressive insanity (6.6 *per cent.*) differ from the European statistics in that rather more women are affected than men, and in the generally later age of onset. Dementia præcox is common, 12 *per cent.*, as compared with Kraepelin's estimate of 14 to 15 *per cent.*

General paralysis is comparatively rare, but is becoming more prevalent. Very few cases were observed in women. The authors consider its frequency to depend on the state of civilisation and not on climatic or ethnological conditions. Syphilis is widespread, but seems to tend to relatively benign skin lesions, and to spare the nervous system. It was present as an antecedent condition in 80 *per cent.* of the general paralytics.

Latah and amok are not really distinct morbid entities, nor are they peculiar to tropical climates. Latah is a variety of hysteria, and similar manifestations occur in European countries. The term "amok" is vaguely employed for any form of impulsive violence followed by amnesia. In most cases it is to be regarded as a manifestation of epilepsy.

As regards the influence of the tropics upon emigrants, the authors consider that the health of an individual is mainly dependent upon adhesion to the rules of life necessitated by the climatic conditions. They have not observed the frequency of insomnia described by Daubler and Rasch.

BERNARD HART.

#### 4. Sociology.

*On the Belief in Demoniac Possession [Über den Glauben an die Besessenheit].* (Allgem. Zeits. f. Psychiat., Bd. lxxiii, H. 1.) Behr.

Dr. Albert Behr has a learned paper of forty pages upon the medical, religious, and metaphysical aspect of this ancient belief. The influence of bad spirits upon men's minds was unknown to the Greeks and Romans. It came from the East, and was accepted by the Christian church. Dr. Behr considers that such a notion is no essential part of Christianity, in which he follows Schleiermacher. The belief that bad spirits can affect the minds of men is, however, accepted both by the Catholic and Protestant churches. Exorcism is still practised in the Catholic church. Behr mentions a case in Austria where a layman was employed to drive demons out of a woman at the rate of two-pence-half-penny for each devil. In the year 1896, a person believed to be possessed was fettered and the exorcists knelt upon the unfortunate, chanting loud prayers till death released him. In 1848, near Dantzic, a witch was thrown into the sea and drowned, and in Mexico, as late as 1874, a sorcerer was burned.

The belief in Satan, and the mischief which he works, still holds good in Protestant Germany, especially amongst the country people. Demoniac possession has been defended by some modern theologians. Behr cites a book by P. Oern, in which the author, who is not unacquainted with



psychology, argues that it still occurs. A strange will, more or less distinct, comes between the body and the mind of the subject, always aiming at the disquiet and destruction of men and opposing Christ and his word.

Against, beside, or under this foreign will may be recognised the will of the real *Ego*. It is not always those who might seem most disposed to such influences who become possessed. Sometimes they are persons who do not talk or indulge in fancies about the devil. Oern regards opposition to religion as due to the action of a strange will—a Satanical power. He gives an instance of what he believes to be demoniac possession in a lunatic, and, indeed, one setting out upon his hypothesis would soon find more in any asylum.

Such influences are scarcely recognised in modern psychiatry. Yet there are many cases where a sejunction of the personality takes place. The patient recognises impulses different from his own, has new tastes, and unwonted feelings, and his character undergoes a change. Sometimes he attributes this to bad spirits, sometimes to electricity, magnetism, hypnotism, telepathy, or other occult influences.

Dr. Behr gives a good example: Mrs. B—, whom he has observed for seven years, was subject to religious delusions and a lively sense of sinfulness; later on she believed that a bad spirit lived within her occupying especially the cavity of the heart. This spirit compelled her, to do everything which he ordered; she felt him within her and heard him speak. He does not speak in her ear, but clearly and distinctly using her own vocal organs. There are disputes between the bad spirit and the woman; she speaks and the spirit answers. She believes that she has been bewitched by three bad women, and has asked the assistance of a physician to get escape. Dr. Behr, with great analytical skill, explains these symptoms as follows: In all men, there are many organic processes which go on below consciousness, but in certain nervous conditions these functions lose their unconscious character, and push themselves into notice, and influence the course of ideas. As long as the intellect retains its activity the patient recognises these as the results of disordered sensation; but when the intellect becomes impaired these disorders—sensory impressions—become the origin of false conclusions and delusive impressions. Under the influence of diseased mental activity are evolved the errors of the hypochondriac or the paranoiac, according to the disposition of the subject.

In this patient, there are also observed movements in the muscles of expression and articulation—the outward manifestations of the delusions and deranged activity within. Lehmann has shown that in any vivid thought there is a tendency to accompany the ideas with articulate words. This is done in a tone so low as to be almost imperceptible. In other cases there is a slight motion of the vocal organs, which can only be ascertained through very close examination.

With some minds, there is an irresistible longing to grope into the unseen, which, in default of Satanic agencies, men have sought to gratify by animal magnetism, clairvoyance, telepathy, spirit-rapping, and other curious inquiries. There is a large and widely diffused literature treating of these subjects. As Behr observes: "Both Satanology and transcendental mysticism have this in common—that they teach the

invasion of an invisible agency into our world. In Satanology there is recognised the hostile attacks upon men through the Prince of the World and his emissaries. In occult lore, the main doctrine is the influence of the transcendental subject upon living men." As DuBrel explains in the journal called *The Sphinx*: "Man lives at once on this side as a living man and on the other side as a transcendental subject. This side and that side are not separate in space, but divided at the threshold of perception (Empfindungsschwelle). That side is this side in another aspect. In exceptional circumstances, as in somnambulism, the powers and capacities of the transcendental subject become known to us, and we can recognise the earthly and the transcendental halves objectively and examine them experimentally. The magical powers of the transcendental subject are exerted in particular directions, as in consciousness of the supersensible (the clairvoyance of the somnambulist) and the magic of the will. This shows itself as the black, harmful magic in sorcery and witchcraft and as beneficent magic in the religious mysticism of saints and prophets.

Thus the churches and the occult philosophers have some grounds on which they may agree, though the latter have wandered beyond the paths of orthodoxy. In fact, a mystic may be defined as one who has the capacity for believing what he wants to believe in spiritual matters. Dr. Behr complains that too little attention is paid to the professors of occult philosophy, who have accumulated a large number of observations, which, in default of criticism, are allowed to pass. Esquirol devoted a large chapter to demonomania, whereas in modern handbooks it is passed off with a few lines. He recommends for study the work of Jung—*Zur Psychol. m. Pathol. Okkultur Phänomene*, 1902—which contains an account of the whole literature of the subject.

WILLIAM W. IRELAND.

*Ten Years' Family Care of the Insane in the Province of Saxony*  
(*Allgem. Zeits. f. Psychiat.*, Bd. lxiii, H. 3). Alt.

Dr. Alt, of Uchtspringe, gave to the Psychiatric Society of Lower Saxony and Westphalia the result of his experience of the boarding out of lunatic patients in families. He recalls that ten years before he had maintained that in this province there were many hundreds of patients who would be more fitly treated in selected families than in the best regulated asylum. He considers that the boarding out can be put in use in most districts if the leading physician is willing to take an active interest in it. During the ten years trial the number of boarded out patients in the Province of Saxony has risen to 475. At first the practice was confined to families in the village of Vilhelmseich, in the neighbourhood of an asylum, and gradually spread to the surrounding districts. In February, 1900, the Land-Tag voted an extension of the permission to board out into further localities. Dr. Alt remarks that the question whether suitable patients are better treated when boarded out amongst families than in a good asylum may be answered by a visit to these family colonies. He does not specify the kind of patient cared for in them.

WILLIAM W. IRELAND.

*Medico-legal Report on the Mental State of a Poisoner* [*Expertise Médico-légale au Sujet de l'Etat Mental de la Femme De K—, Prévenue d'Empoisonnements*]. (*Bulletin de la Soc. de Méd. Ment. de Belgique*, No. 126, April, 1906.) De Boeck and de Rode.

The case reported in this paper is chiefly interesting on account of the length of time which intervened between the morbid impulses leading to the crime and the development of obvious intellectual disorder. The criminal, whose age is not stated, poisoned her three children with arsenic, which she had purchased three weeks previously under the pretence that she wanted it for rats. From the date of her last confinement, which occurred about four and a half or five months prior to the crime, she had been in low spirits, believed that she was suffering from phthisis, talked of her impending death, and of her intention to take her children away from misery with her. The day of the crime, after a sleepless night, she went to church, where her pre-occupied appearance attracted the notice of her neighbours. She attended to her usual household duties for some hours, and then gave the poison to the children. When they began to be ill she administered remedies and sent for the doctor. At first she pretended that the affair was an accident, but soon after admitted her guilt, stating that she had bought the arsenic for the purpose of killing the children, but that the idea had left her mind until that morning.

There was nothing of note in the family history, except that her mother died of phthisis. Nor did the woman's own history present any remarkable features. She had suffered, however, from a good deal of worry owing to the adulterous relations of her husband with her sister, but this liaison had been broken off some considerable time before the crime. Beyond a very marked degree of facial asymmetry and a defective frontal development, she presented no stigmata of degeneracy. Her physical health appeared good, but there was some rough breathing at right apex. Questioned on the subject of her crime, she replied with clearness and accuracy, though rather hesitantly. She explained her action as she had done immediately after the affair, saying that her children were sickly, that she was not going to live, that by killing them she was sending them to Heaven; she added that she did not take the poison herself because she would have been damned. For two weeks no change occurred in her mental condition, but she then rapidly developed symptoms of hallucinatory confusion of an acute type. As the case is in many respects of much psychological interest, it is to be regretted that the authors have not reported it in more detail, especially with regard to its later phases.

W. C. SULLIVAN.

## Part IV.—Notes and News.

### MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

A QUARTERLY MEETING of the Medico-Psychological Association was held at the Notts County Asylum, Radcliffe-on-Trent, on February 22nd, 1907, at 3 p.m., under the Presidency of Dr. Robert Jones.

Among those present were Drs. T. S. Adair, M. T. Archdall, H. T. S. Aveline, Bedford Pierce, C. Hubert Bond, David Bower, James Chambers, Maurice Craig, Thomas Drapes, A. J. Eades, A. Ewan, W. J. A. Erskine, H. Hayes Newington, C. L. Hopkins, C. R. Hitchcock, Robert Jones, T. L. Johnstone, C. H. G. Lyall, A. Miller, H. J. Mackenzie, P. W. MacDonald, David Orr, M. E. Paul, R. G. Rows, R. C. Stewart, R. H. Steen, A. R. Turnbull, F. R. P. Taylor.

Apologies were received from Drs. Bruce, Bolton, Clouston, Mercier, Marr, Menzies, McDowall, Nolan, Outterson Wood, Percy Smith, Seymour Tuke, Urquhart, Whitwell, Yellowlees.

The minutes of the previous quarterly meeting were read and confirmed.

The following were elected ordinary members: Jex-Blake, Bertha, M.B., Ch.B.Univ. Edin., Assistant Medical Officer, County and City Asylum, Hereford (proposed by C. S. Morrison, Robert Jones, and C. Hubert Bond); Rivers, William Gregory, M.B., Ch.B.Univ. Edin., Assistant Medical Officer, Cornwall County Asylum, Bodmin (proposed by Francis Dudley, Geo. Harman, and C. Hubert Bond).

The PRESIDENT made sympathetic reference to the death of Dr. McDowall, of Menston, and acknowledged the help he had received from him in the opening of Claybury Asylum. He also made mention of the severe domestic trouble that had befallen Dr. Needham in the recent death of Mrs. Needham. It was resolved that votes of condolence from the Association be conveyed to the widow of Dr. McDowall and to Dr. Needham. It was also resolved that to Dr. Percy Smith and Mr. Harold Urmson (Legal Lunacy Commissioner) the sincere sympathy of the Association be conveyed in connection with the severe illnesses that have overtaken them.

The President announced that the dates of the Annual General Meeting had been fixed for the 25th and 26th of July, and that it would be held in London. He also intimated that the date of the next quarterly meeting had been altered to Thursday, May 16th.

The President said he thought members might like to know that reprints of Dr. Bevan Lewis's address "On the Formation of Character," which was delivered to nurses at the York Retreat, may be obtained on application to the publishers, Messrs. Adlard and Son.

At the request of the President, the Honorary General Secretary showed a complete set of the "Compilation Forms" which have been prepared to facilitate the compilation of the new Tables, and also a complete set of the new Tables themselves, printed on a sufficiently large scale to enable compilers to enter the figures in manuscript. He explained how it was intended they should be used in connection with the new Registers, namely, the Medical Register, the Discharge and Transfer Register, and the Death Register, which in England and Wales have become statutory.

In reference to the resolution submitted by Dr. Clouston "That the meetings of the Council for the future be held either on Saturdays or Mondays," the PRESIDENT said that Dr. Clouston suggested this on account of the difficulty there was in getting a cheap return ticket allowing of a stay of two or three days in London. The matter, he said, had had the full consideration of the Council that morning, and the Council had asked the Treasurer to go fully into the matter, and to make



inquiries of the various railway companies in the United Kingdom to see if they would allow facilities in the middle of the week corresponding to those they now allowed from Saturday to Monday or Friday to Tuesday. He hoped this would meet the views of those who came from Scotland.

Dr. DAVID ORR and Dr. R. G. ROWS, Pathologists to the Prestwich and Lancaster Asylums, then gave their joint lantern and microscopical demonstration on the "Experimental Production of Spinal and Cranial Nerve-lesions by Toxins," see page 367. The importance of their contribution was fully appreciated.

Before separating the PRESIDENT said there were two further matters he should like to refer to, first, they had lost by death in America, Dr. A. E. MacDonald. He was in great sympathy with their Association, and at the time of his death a correspondence was going on between him and Dr. Bond with regard to the establishment of a joint meeting of the two Associations—the British and the American. He was sure they would unanimously pass a vote of condolence with his widow. Secondly, they must be grateful to their host, Dr. Jackson, and also to his sub-committee, for the privilege they had had of seeing over this new asylum. He thought that these provincial meetings of the Association were a very happy way of forming acquaintances and of strengthening ties of friendship. The Association had afforded to members, for many years past, opportunities of seeing friends and talking over their work and the progress which science was making in their fuller understanding of mental diseases and their treatment. He had himself walked through the asylum under Dr. Jackson's superintendence, and he was able to compliment him on the comfort and the excellent appearance of his asylum, showing that not only was he doing good work, but that he was supported by very able officers. He trusted that they would unanimously agree to pass a cordial vote of thanks to the Sub-committee of the Asylum, and also to Dr. Jackson, and to ask the latter to convey the same to the governing authorities.

Dr. STEWART (Leicester) seconded. He said he had had the pleasure of visiting the Asylum four times, and he should like to say that Dr. Jackson had had very uphill work in bringing the Asylum into the condition in which they saw it, and he congratulated him on such an excellent result.

The resolution was carried unanimously.

Dr. JACKSON, in acknowledging the vote of thanks, said that he very highly appreciated the honour the Association had done him by visiting the Asylum.

In the evening between twenty and thirty members dined together at the George Hotel, Nottingham, and entertained several guests from the neighbourhood.

### IRISH LUNACY LEGISLATION.

At a meeting of the Lunacy Legislation (Executive) Sub-committee held at the rooms of the Association, 11, Chandos Street, Cavendish Square, W., on Wednesday, April 3rd, 1907, it was resolved unanimously—

"That in view of pending Legislation for Ireland, likely to affect Lunacy Administration, the following considerations should be placed briefly before the Chief Secretary:

- "1. That the usual method of Certification for admission into the Public Asylums in Ireland is unsatisfactory and requires amendment.
- "2. That facilities should be provided for the Admission of Voluntary patients or boarders into all Asylums in Ireland.
- "3. That provision should be made for Boarding out Pauper patients in private houses as is done so successfully in Scotland.
- "4. That the Chronic Insane of the harmless class should be treated in Annexes to existing Asylums in preference to workhouses or other institutions with separate administrations both on the ground of efficiency and economy.
- "5. That the provisions of the English Idiots Act, 49 and 50 Vict. c. 25, should be extended to Ireland.
- "6. That the qualifications of the Resident Medical Superintendent of an Asylum set out in S. 24, clause 2, of the Local Government (Ireland) Act of 1898 should be retained, and the mode of Election of Asylum Medical

Officers, together with their status and powers should be clearly defined by Statute.

- "7. That in order to secure a better class of Nurses and Attendants, and thus promote the better care and supervision of the patients under their charge the Superannuation of the Officers and Staff of every Public Asylum in Ireland should be made compulsory, and—
- "8. That with their extended duties and responsibilities an increase in the numbers and powers of the Inspectors of Lunatics in Ireland is necessary."

### OBITUARY.

F. K. DICKSON, M.D.

By the death of Dr. Francis Kennedy Dickson, of Wye House, Buxton, the Association loses one of its senior and widely respected members, who, by his character and social position, reflected honour upon it. Dr. Dickson was not alone the successful superintendent of a private asylum, but a man who took a strenuous part in all the social work of his district. He was an active Justice of the Peace for the county of Derbyshire, second in seniority on the Buxton Bench, and Chairman of the Licensing Committee. He was Senior Consulting Physician to the Devonshire Hospital, an active supporter of the Buxton and District Nursing Association, and took an active part in many other local movements and interests.

Dr. Dickson was Honorary Acting Medical Officer to the Devonshire Hospital and Buxton Bath Charity from 1865 to 1878, and succeeded his father as proprietor of Wye House, which post he held for upwards of thirty years.

His death occurred suddenly on the evening of February 2nd, after a brief indisposition of two days only, in his sixty-fourth year, and the great esteem in which he was held was manifested by the attendance at his funeral of representatives of the many public bodies with which he had been associated, as well as by a very large number of friends.

JAMES EDMUND HUXLEY, M.D.St.And.

It falls to my lot to record the death in February last at Maidstone of this gentleman who, in point of age, was the doyen of public asylum superintendents in England. He was the elder brother of the late Prof. T. H. Huxley, President of the Royal Society. He was in his eighty-seventh year, and had been in receipt of a pension of £300 a year from the Kent County Authorities since the year 1863, and during that long period of retirement had resided at 39, Upper Fant Road, Maidstone, near the scene of his former labours. I believe he commenced his professional career as Medical Superintendent of the old Marylebone Infirmary, then became for a short time Medical Superintendent of the Gloucester County Asylum, from which he was elected Medical Superintendent of the then comparatively new Kent County Asylum at Barming Heath, near Maidstone, where he was often visited by his two brothers—the late Professor Huxley, and the youngest, a rising barrister, who died at a comparatively early age. All were highly talented men, but of the three the youngest was the most gifted, and I have heard that to spend an evening in their company was a great intellectual treat. Dr. James Huxley was an original member of our Association, and his name appears frequently in the first number of the *Journal of Mental Science*, then designated the *Asylum Journal*, to which, among other contributions, he communicated a paper on the Kent Asylum at Barming. Being of a retiring disposition he did not take an active part in the official work of the Association, and later on, when his health failed somewhat, his interest also declined. Amongst his Assistant Medical Officers were the late Dr. Wm. Charles Hills, afterwards, for many years, Medical Superintendent of the Norfolk County Asylum, and the late Dr. Robert Spencer, the first Medical Superintendent of the Kent County Asylum at Chatham. Dr. James Huxley retired at an early age (43) in consequence of ill-health, and lived the quietest and most secluded of lives. He was twice married and leaves issue.—ERNEST W. WHITE.

## EBENEZER TOLLER, M.R.C.S.Eng.

We regret to record the death of Mr. Ebenezer Toller, formerly Medical Superintendent of the Gloucester County Asylum. Mr. Toller received his medical education at King's College Hospital, and took the diplomas of M.R.C.S.Eng., 1857, and L.S.A., 1858. He forthwith devoted himself to the study of mental diseases, and held in succession the posts of Assistant Medical Officer at St. Andrew's Castle Licensed House and Colney Hatch Asylum. Thereafter he was appointed Medical Superintendent of St. Luke's Registered Hospital, and later of the Gloucester County Asylum. The latter post he held from 1863 to 1882, when, owing to ill-health, he was compelled to resign.

Mr. Toller strongly advocated the carrying out of the treatment of the insane in as home-like surroundings as possible; he did much to popularise the provision of entertainments for the inmates of asylums, and he himself was musical and athletic. He was a Fellow of the Royal Meteorological Society, and during his residence at Gloucester he made systematic meteorological observations. He had five sons, of whom only one survives him.

## NOTICES BY THE REGISTRAR.

List of the successful candidates at the examination for the Nursing Certificate held in November, 1906.

*Pretoria, S. Africa.*—Males: Percy William Robert Smith, William Herbert E. Stanford, Harry Thomas. Females: Elizabeth C. Forsyth, Catherine Boothwick.

*Valkenberg, S. Africa.*—Male: Stephen H. Creaghe. Females: Frances May Scott, Hilda Domarns, Helena Hume.

*Londonderry.*—Males: James Mullan, John McBride.

*Omagh.*—Male: James Kelly. Females: Minnie Duffy, Maggie J. McEntee, Catherine Coyle, Susan E. Patterson.

*Portrane.*—Females: Alice Culverwell, Lissie Donohoe, Mary Gaffney, Nora Murphy, Mary Ryan, Delia Duffy.

*Birmingham, Rubery Hill.*—Males: Robert J. Hardwicke, Robert James Downes, George Greaves, Edwin James Dyer, John Henry Timings.

*Derby Borough.*—Males: George Barlow, Edwin Hill. Female: Gertrude Shaw.

*Leavesden.*—Males: James Ubut Stayton, Albert James Yendell, Charles Hammond, Robert V. Youens. Female: Florence E. Batchelor.

*Retreat, York.*—Male: John Duff. Females: Jessie C. Vowles, C. Annie Atkinson, Lucienne J. Chaure.

*Holloway Sanatorium.*—Males: George Read, Gilbert L. Robinson, Charles Oakey. Females: Edith E. Cornell, Mary H. Bennett, Annie M. B. Macartney.

*Fife and Kinross.*—Males: John Honeyman, William McDougall.

*Gartloch.*—Females: Annie Christie, Isabella S. Moir, Bella H. Drummond, Marion McDonald, Elizabeth McHarg, Margaret Ann McDonald.

*Glasgow District.*—Male: Archibald Macdonald. Females: Annie Spalding, Georgie S. Coventon, Hannah Graham, Christina McLuckie, Mary McDougall Hemphill.

*Inverness District.*—Male: John Henderson. Females: Annie Connolly, Margaret Helen Reid, Mary McMillan, Isabella W. Drummond.

*Leamington District.*—Male: John McDonald. Females: Beatrice Bell, Agnes M. Gourlay.

*Perth District.*—Female: Christian MacGlashan.

*Riccartshill.*—Male: Robert Gow. Females: Clara Leighton, Jennie T. Sim.

*Stirling District.*—Female: Elizabeth B. Reid.

*Bangour Village.*—Female: Jessie C. Forsyth.

*Craig House.*—Males: Neil Lockhart, Edward McMunn. Females: Mary Scrimgeour, Agnes Haston, Martha P. Pearson, Margaret Ann Pollock, H. McEndoo.

*Morningside.*—Males: James Cameron, David Coghill, William McHardie, Alexander McLeod. Females: Kate M. Leighton, Annie Low, Jessie McPherson, Agnes Simpson, Mary Strachan.

*Sir James Murray's House, Perth.*—Female: Isabella Rutherford.

*Private Nurse.*—Female: Tina M. McLennan.

*Essex County.*—Female: Elizabeth James.

*Salop County.*—Female: Rebecca Davies.

*Warwick County.*—Males: Wilfred S. Hall, Frank Dimmock. Females: Mary J. Banahan, Annie Davies, Maggie J. Donohy, May Handley, Annie Ward, Anna Muller.

*Private Nurse.*—Female: Florence E. Royston.

The following is a list of the questions which appeared on the paper:

1. Enumerate the bones which enter into the formation of the Thorax, and state what organs that cavity contains.
2. Describe generally the structure and function of Muscle.
3. What is meant by reflex action, and how is it distinguished from voluntary action?
4. What symptoms occurring in a patient would point to the possible existence of Heart Disease?
5. Indicate the chief points in the modern nursing of a case of pulmonary consumption.
6. What symptoms are likely to arise in a case of General Paralysis requiring special care on the part of a Nurse?
7. What routine measures would you use in order to see that patients have not escaped from observation?
8. Describe the management of a patient in an Epileptic fit.
9. Describe the application of the wet pack.
10. What is meant by exaltation of blind, and how is it shown?

#### EXAMINATION FOR THE NURSING CERTIFICATE.

The next examination will be held on Monday, May 6th, 1907.

The last day on which schedules can be received will be Monday, April 8th, 1907.

#### NOTICES OF MEETINGS.

*Annual Meeting.*—The next Annual Meeting will be held in London on July 25th and 26th, 1907.

*Quarterly Meeting.*—The next meeting will be held in London on Thursday, May 16th, 1907.

*South-Eastern Division.*—The Spring Meeting will be held, by the courtesy of Dr. Taylor, at the East Sussex County Asylum, Hellingly, on April 17th, 1907.

*South-Western Division.*—The Spring Meeting will be held, by the courtesy of Dr. Morrison, at the County and City Asylum, Burghill, Hereford, on April 18th, 1907.

*Northern and Midland Division.*—The Spring Meeting will be held, by the courtesy of Dr. Perceval, at Prestwich Asylum, on April 18th, 1907.

#### APPOINTMENTS.

Donaldson, R. Lockhart, B.A., M.D.Dublin, Resident Medical Superintendent of the Monaghan and Cavan District Asylum, Monaghan.

Edgerley, Samuel, M.D.Edin., Medical Superintendent of the West Riding Asylum, Menston.

Garden, W. Sim., M.B., B.Ch.Aberdeen, Second Assistant Medical Officer, Menston Asylum, Leeds.

Lord, John R., M.B.Edin., Medical Superintendent of the London County Asylum, Horton, Epsom.

Martin, H. C., M.B., Ch.B.Edin., Assistant Medical Officer at the Newport Borough Asylum, Caerleon, Mon.

Smith, Wm. M., M.D., M.R.C.P.Edin., Senior Assistant Medical Officer at Barnsley Hall Asylum, Bromsgrove.





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VOL. LIII.

## Part I.—Original Articles.

### *Amentia and Dementia: a Clinico-Pathological Study.*

By JOSEPH SHAW BOLTON, M.D., M.R.C.P., Fellow of  
University College, London; Senior Assistant Medical  
Officer, Lancaster County Asylum, Rainhill.

## PART III.—DEMENTIA (*continued*).

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## GROUP I.—PRIMARILY NEURONIC DEMENTIA.

### CLASS (D).

#### *Premature Dementia (Dementia Præcox).*

The present class, to which is here applied the term "premature dementia," differs from the three classes of primarily neuronic

dementia, which have already been considered, in the fact that, owing to its re-cognition by Kahlbaum and to the attention drawn to it by Kraepelin, its types and their symptomatology, even to the minutest detail, have been described and detailed in an extensive literature. It is not the purpose of this paper to give a complete historical account, or even a general description, of this variety of dementia; the object of the writer is rather to treat it as the compeer of the other three classes of primarily neuronc dementia which have already been dealt with. He therefore proposes to limit himself to a general reference to those especial details of symptomatology which for his purpose are of importance, and to certain generalisations on the entire subject of premature dementia. Where he agrees with the observations and conclusions of previous writers he does not claim priority by omitting references to these, for he takes it for granted that readers of the present paper are necessarily familiar with, at any rate, the more important literature on the subject, and where he differs from present opinion he trusts that the general trend of this communication will uphold the views he expresses. Such a course is the only possible one to adopt in a contribution which has already become of inordinate length. The relative baldness of the descriptions, in view of the immense literature available, is thus intelligible, and he hopes excusable, for his account of the variety of primarily neuronc dementia at present under consideration is merely intended to run *pari passu* with those of the preceding classes, which classes are, in his opinion, equally important from the psychiatric aspect, though they have hitherto not received adequate recognition.

The term "dementia præcox" has of late years been employed so extensively with reference to almost every type of insanity occurring between puberty and maturity, and so much doubt therefore exists as to its exact connotation, that the writer has considered it desirable to here make use of the alternative cognomen of "premature dementia."

Many cases of adolescent insanity, with relatively little mental confusion, recover sufficiently for discharge either as "recovered" or to the care of their friends, and are then often able, on a lower mental level, for long periods of time, or permanently, to sustain without injury the ordinary environment of the sane. Other cases, which are really examples of high-

grade amentia of relapsing type—though, except for the absence of mental confusion, they bear a close resemblance to certain of the confused cases—also recover, at any rate for the time. Further, a few examples of the “hysteria” class of high-grade amentia, which exhibit cataleptoid phenomena but no mental confusion, also recover, and thus even the grave symptom-complex commonly referred to as “catatonia” is credited with a number of recoveries. The first only of these types furnishes examples of mild premature dementia, but cases belonging to all three are often referred to as “recoveries” from dementia præcox, and thus certain writers object to the employment of the term “dementia” to connote a symptom-complex which furnishes a quota of cures.

As will be seen later in this section, the writer is strongly of opinion that uncomplicated examples of premature dementia (in which the preliminary mental confusion is not precipitated by a primarily toxic, and therefore removable, cause) invariably exhibit a degree of mental confusion during their initial phases, which is roughly proportionate to the grade of dementia which ensues, and that recovery without some grade of dementia does not occur. He therefore employs the term “premature dementia,” as a co-ordinate of the terms “mature,” “presenile,” and “senile or ‘worn-out’ dementia,” to describe the cases of primarily neuronc dementia which occur during the period of life which is limited by puberty on the one hand and maturity on the other, and which exhibit during their initial phases a certain, and often a severe, grade of mental confusion.

The class of premature dementia, as thus defined, includes all cases which undergo a greater or lesser degree of neuronc dissolution, with consequent stationary dementia, between the ages of puberty and maturity.

A large proportion of these cases break down, not only under the influence of the metabolic disturbances which are associated with the former and “critical” period of life, but also, and probably more often, under the mental “stress” involved in the general change in the functions of the cerebrum from the mere acquisition of information to the performance of the higher processes of mind—namely, the orderly aggregation and selection of facts, the co-ordination of these into suitable sequences of ideas to enable judgments to be evolved, and the turning of acquired information to practical uses—which change of cerebral



function also commences about the period of puberty. Under this "stress," cases possessing higher cortical neurones of deficient durability go to the wall.

It is thus readily intelligible, in fact obvious, that this class must include, not only cases of relatively high mental capacity, whose cerebra have, by over-study and intense application, been strained beyond their breaking-point, but also numbers of degenerates who, under the influence of "stress," which would be sustained without injury by normal subjects, have similarly over-strained what, in this instance, are deficiently durable cortical neurones.

The former type of case occurs, not only in asylums, but also in the outside world. It is, for example, common knowledge that only a proportion of the brilliant students of medicine, who, during their course of study, carry all before them, attain in later life to eminence, this term being employed in a scientific rather than in a popular or a pecuniary sense. In the remainder, over-strain has reduced their mental powers to a more ordinary level, and though of, perhaps, average intelligence, "push," and business capability, they are nevertheless, in a strict sense, examples of premature dementia. This condition is not, however, limited to individuals of unusual mental power. The writer is not aware that he is stating anything original when he remarks that he has seen many examples of premature dementia in men in the possession of ordinary mental powers, who, by dint of exceptional perseverance, have obtained the more coveted medical qualifications, and who afterwards exhibit, not more, and often less, ability than is possessed by quite ordinary individuals. He is convinced that such cases are true examples of premature stereotypism or premature dementia, which has developed under the influence of mental strain that could not be submitted to by these individuals without irretrievable damage to an appreciable number of their cortical neurones; and that the phenomena referred to are not, as is so commonly stated, due simply to the absence of what is often described as a "capacity for affairs," or a practical, in contra-distinction to a theoretical, mind.

Between such cases and those who require asylum *régime*, and often develop enough dementia to require their permanent detention, there is merely a difference of degree.

In the case of definite degenerates, the onset of insanity,

followed by premature dementia, is more readily intelligible, and is, in fact, appreciable even to the layman: and during the past few years the question of the care and control of the "feeble-minded" has attracted much attention. It is unnecessary, therefore, from its general aspects, to enter into a discussion of this subject, though a few remarks on the origin and course of the particular type of case which commonly drifts into asylums is, perhaps, not out of place. Of such patients, some, after leaving school, pass from situation to situation, becoming duller after each change, either until no employer will keep them, or until definite symptoms of insanity supervene; others, under the influence of stronger minds, leave home for the large towns, or even for distant countries, and return some years later as premature demented; others, by morbid introspection and the (in many instances secondary) development of masturbation, acquire perverted sexual and hypochondriacal ideas, which undermine their powers of application and result in their isolation in asylums; etc. In other cases the resistance of the cortical neurones is exceeded by intemperance in alcohol, and, in the case of girls, married or unmarried, by the "stress" involved in ordinary or illegitimate pregnancy and confinement. Any variety of mental or physical "stress" may, in fact, act as the last straw, or precipitating agent, in determining the onset of an attack of insanity, and the question of whether or not enough dementia for the permanent detention of the patient supervenes, depends entirely on whether a sufficiency of cortical neurones have, or have not, undergone irretrievable damage.

Many cases of the kind recover sufficiently to gain their discharge from confinement, and return to their former environment with mental powers of a feebler order than they possessed before their attack of insanity. It is needless to state that such cases usually in the course of time return to the asylum, and, according to circumstances, repeat the process or remain as permanent inmates with dementia. Such cases, it may be remarked, are not to be confounded with examples of true recurrent insanity who do not develop dementia, but return again and again to their accustomed avocations with unimpaired mental powers, commonly, it is true, when in later life retrogression of the cortical neurones occurs, to become permanent inmates with, however, relatively little dementia. The remainder of the cases under consideration do not recover, but develop

either a mild or a moderate degree of dementia, remaining in this condition, owing to the absence, whilst under asylum *régime*, of enough "stress" to produce further mental deterioration, until normal retrogression or "wearing out" of the cortical neurones ensues. Such cases differ from the types of pure high-grade amentia referred to in the second part of this paper, solely in the fact that the latter still possess cortical neurones in a generally unimpaired structural condition, whereas the cerebra of the former have undergone a greater or a lesser degree of dissolution.

It is not the purpose of the writer to deal in an exhaustive manner with the preliminary symptomatology of premature dementia, as the subject of the general relationship of mental confusion to dementia has already been considered at length in a previous section (*Journ. of Ment. Sci.*, July, 1906, pp. 427-490). It is, however, necessary for the purpose he has in view to introduce certain general remarks on this subject in order to emphasise some of the especial characteristics of the dementia of prematurity.

Mental confusion, in the experience of the writer, exists to a greater or a lesser degree in all premature cases which are about to develop dementia, provided that the psychic state of the patient is not such (*e.g.*, in certain cases of deep stupor, etc.) as to preclude, for the time at least, the exhibition of this symptom-complex. He has, in fact, observed, as his experience has year by year increased, that the proportion of cases exhibiting negative motor symptoms, in which it is not possible to determine the existence of mental confusion, has steadily decreased as he has paid more and more attention to such motor phenomena as the patient has been capable of originating. It has been a relatively rare experience to meet with cases of stupor which, on recovery, have been able to clearly describe what has happened whilst they were in a condition of lethargy, during which they were unable to initiate any motor response, even to intensely painful stimuli: and such cases have hitherto been examples, not of premature dementia, but of recurrent or relapsing insanity. He thus feels justified in expressing the opinion that mental confusion exists to a greater or a lesser degree in the preliminary stages of all cases of premature dementia. Further, he considers that mental confusion is a symptom of especially grave import in cases of premature insanity, and, except in the small proportion of cases in which

primarily toxic and, therefore, removable causes (*e.g.*, intemperance in alcohol and puerperal toxæmia, etc.) exist, is invariably the precursor of a degree of dementia which is roughly proportionate to the amount of mental confusion present. He is thus of the opinion that the exhibition, with the above-mentioned restriction, of mental confusion by cases of premature insanity is of such significance as to justify an unfavourable prognosis, and at the same time to remove the most important objection to the employment of the term "premature dementia," or "dementia præcox," provided that this cognomen be employed, as here, solely to denote cases of premature insanity which exhibit a more or less marked degree of mental confusion as part of their "acute" or "recent" symptomatology.

Whilst premature dementia, from this particular aspect of preliminary symptomatology, falls into line with the other classes of primarily neuronc dementia which have already been considered, it differs from these in the frequent exhibition of such characteristic phenomena, that it is not a matter for surprise that its study should have vastly overshadowed, both in extent and in detail, that devoted to these other varieties, with the sole exception, perhaps, of that particular well-known symptomatological type now usually designated by the name of "Korsakow's symptom-complex."

Though the necessary references to these characteristic phenomena will be made under the appropriate sub-classes into which the cases of premature dementia under consideration will for convenience be grouped, the writer purposes to here interpolate a few remarks which are intended to suggest a probable reason for their especial exhibition by the cases belonging to this class.

This is, in brief, in the opinion of the writer, to be found in an immature condition of the centres of association of the cerebrum. In cases belonging to the previous classes of "senile," "presenile," and "mature" dementia, whatever be the respective degrees of involution or dissolution which later on result, the centres of association, both lower and higher, have by frequent repetition necessarily acquired a capacity for relatively stable neuronc groupings as the physical basis of the psychic processes performed by the respective patients; and this statement especially applies to the neuronc groupings in the psycho-motor area, which serve as the physical basis for the



performance of "skilled" voluntary accomplishments. In other words, in these classes, considered for the moment from the purely physical aspect, the cerebra are completely built and thoroughly tested machines in full running order at the time when the breakdown is precipitated by too rapid running or by "wearing out."

In the case of the class of premature dementia under present consideration the state of affairs is very different. Here there is, in the first place, a highly-deficient durability of the cortical neurones; or, to continue the simile, imperfectly tempered material has been employed for the construction of the parts: and the neurones, or the parts themselves, are, in many instances, imperfectly constructed. Further, though most of, or all, the individual parts are placed in preparatory juxtaposition, even the simpler complexes of construction have only recently and experimentally been grouped into series. This is, in fact, the case even in the more highly endowed patients, in whom the higher complexes of neuronic association have already been tentatively produced.

It is thus only to be expected that, when such a machine is set running at high speed, all kinds of local breakdown will ensue. In the human cerebrum, owing to a structure which in its complexity of construction overshadows any machine of human manufacture, and to the numerous sources of motive power which exist through the medium of the different varieties of sensorial stimulation, complete breakdown is relatively rare, though local stoppages, local anomalous groupings of the simpler complexes, and particularly local repetitions or irregularities of action, are of common occurrence. This is especially obvious, though not peculiar to these, in the case of the more fundamental motor exhibitions, the patient either performing, or not performing, or often repeating, certain actions, and exhibiting, as the essential characteristics of these motor performances, on the one hand a tendency to uncertainty, and on the other a tendency to repetition, of action.

It is an obvious deduction from the above considerations that a more scientific classification of the types of premature dementia should be possible than obtains in the case of the "senile," "presenile," and "mature" classes of primarily neuronic dementia. In the latter, some, at least, of the symptomatological sub-classes are without a real, or even perhaps

a possible, pathological basis—*e.g.*, such symptom-complexes as mania or melancholia, which are probably merely gross exaggerations of the normal emotional tone of the individual patients,—though they sufficiently serve the purposes of clinical description. In the case of premature dementia, however, it is possible to make a subdivision of the cases into those which do and those which do not exhibit phenomena which originate in sub-evolutional or dissolutive conditions of the psycho-motor area of the cerebral cortex. It is doubtful whether a further subdivision of the latter class into simple hebephrenic and paranoid types possesses, in the present state of our knowledge, an equally trustworthy pathological basis; but, in spite of a gradual shading of the cases into one another, such a separation of types is, at least, justifiable, and is at any rate convenient, from the clinical standpoint.

In the present section, therefore, the cases under consideration will be approximately classified into the commonly accepted “hebephrenic,” “catatonic,” and “paranoid” types.

The descriptions which follow, as has already been stated, are not intended by the writer either to illustrate the general symptomatology of the types, or to include all the more obvious clinical features which they present. They merely contain such details as he especially desires to bring into prominence in order to serve the purpose he has in view—namely, to demonstrate that premature dementia is not a simple clinical entity or a specific disease of the cerebrum, but is merely the dementia which develops at the earliest of the four most common periods of life at which primarily neuronc dissolution of the cerebrum occurs.

The class at present under consideration contains 112 cases, which will be classified as follows:

	M.	F.	T.	Per-centage.
Sub-class (1), approximately “hebephrenic” . . .	32	32	64	57
Sub-class (2), approximately “catatonic” . . .	23	18	41	37
Sub-class (3), approximately “paranoid” . . .	2	5	7	6
Total of cases of “premature dementia” . . .	57	55	112	100

As might be expected in primarily neuronie dementia at the premature period of life (and as is also illustrated in the analogous but *progressive* dementia of juvenile general paralysis), the sexes are approximately equally affected, for at this period the predisposing factor—deficient durability of the cortical neurones—overshadows in importance the various exciting factors, which later in life not only acquire a greater relative value but differ both in kind and in degree in the two sexes.

*The average age on certification*, which is the only age available in the whole series, differs little in the several sub-classes, being as follows :

	M.	F.	T.
Sub-class (1) . . . . .	23	25	24
Sub-class (2) . . . . .	26	24	25
Sub-class (3) . . . . .	21	25	24

*Sub-class (1).*—The age on certification varies from 15 to 30 years in the males, and from 16 to 30 in the females. The earliest age of *onset*, on such information as is available, is 15 years in the case of the males and 14 years in the case of the females.

*Sub-class (2).*—The age on certification varies from 15 to 29 years in the males (with the exception of one patient, who was kept at home from the age of 28 years to that of 34 years, at which age he was sent to an asylum), and from 19 to 27 years in the females. The earliest age of *onset*, on such information as is available, is 15 years in the case of the males and 17 years in the case of the females.

*Sub-class (3).*—The age of certification varies from 20 to 22 years in the males, and from 23 to 28 in the females. Owing to the small number of cases in the “paranoid” sub-class, these ages are, however, valueless for statistical purposes.

It is probable that few of these figures possess much real value, as the time of certification depends so much on the degree of trouble caused by the patient in his home or workhouse environment, and as the writer had few opportunities of obtaining really satisfactory personal histories, for in the case of admissions consisting of chronic patients the obtainable infor-

mation varies in amount conversely with the duration of the certification of the individual patients.

*Previous attacks.*—The ascertained number of cases which had been previously certified is as follows :

	Males.	Females.	Total.	Percentage.
Sub-class (1) . . .	7 in 32	3 in 32	10 in 64	16
Sub-class (2) . . .	8 in 23	5 in 18	13 in 41	32
Sub-class (3) . . .	0 in 2	1 in 5	1 in 7	14
Total . . . . .	15 in 57	9 in 55	24 in 112	21
Percentage . . . . .	26	16	21	

Though this information is necessarily incomplete, the error of omission is presumably equally scattered throughout the series, and hence it may be deduced, as a crude observation, that previous certifications are more common in the male sex than in the female.

It may also be inferred that previous certifications are more common in the "catatonic" than in the "hebephrenic" and the "paranoid" types, and this inference is supported by the common clinical observation that "catatonic" cases often progress in a relapsing manner rather than as a slowly advancing mental deterioration, and are therefore more likely to be sent out "recovered" or to the care of their friends.

*Heredity of mental disease.*—The ascertained heredity of mental disease, though it possesses no actual value, leads at least to the inference that little or no difference in this respect exists between the different types. It is as follows :

	Males.	Females.	Total.
Sub-class (1) . . . .	34 per cent.	34 per cent.	34 per cent.
Sub-class (2) . . . .	26 per cent.	44 per cent.	34 per cent.
Sub-class (3) . . . .	50 per cent.	20 per cent.	29 per cent.
Total . . . . .	32 per cent.	36 per cent.	34 per cent.

Though the percentages differ in the two sexes, it is probable



that no deduction can safely be drawn from these, as it would not be justified by the number of available cases.

*The average duration of residence* in an asylum at the time of observation is as follows:

	Males.	Females.
Sub-class (1) . . . .	10 years (1—34 years)	10 years (1—29 years)
Sub-class (2) . . . .	8 years (1—21 years)	9 years (1—30 years)
Sub-class (3) . . . .	9 years (7—11 years)	12 years (2—27 years)

These figures demonstrate that the average duration of life is not appreciably affected by the clinical type of the symptomatology, for the 112 cases represent the “premature dementia” population of an asylum at a *particular time*, and are not a series of cases selected during a *special period of time*.

As has already been stated earlier in this paper (*Journ. Ment. Sci.*, April, 1905, p. 337), one of the most frequent symptomatology associated with the development of tuberculosis is one presenting many resemblances to stupor. This is probably the explanation of the fairly common opinion that cases of “catatonia” are especially prone to the development of tuberculosis—a view contradicted by the above data, which show that the average duration of residence of these cases differs little from that of the other types of premature dementia.

*Degree of degeneracy.*—Important conclusions have been derived from a study of the 112 cases from the point of view of physical and mental degeneracy, as the three types differ markedly in this respect.

In the following table are given the actual numbers and the percentages of degenerates—*i.e.*, of high-grade aments who exhibit marked stigmata of degeneracy, and in many cases evidence of developmental feeble-mindedness, which is almost sufficiently marked to cause them to be classed as cases of imbecility (the mildest type of low-grade amentia).

From this table the following inferences may be drawn:

	Males.		Females.		Total.	
	Proportion of degenerates.	Percentage.	Proportion of degenerates.	Percentage.	Proportion of degenerates.	Percentage.
Sub-class (1), "hebephrenic"	20 in 32	62'5	13 in 32	40'6	33 in 64	51'6
Sub-class (2), "catatonic"	7 in 23	30'4	7 in 18	39'0	14 in 41	34'1
Sub-class (3), "paranoid"	2 in 2	100'0	1 in 5	20'0	3 in 7	42'9
Total	29 in 57	50'9	21 in 55	38'2	50 in 112	44'6

(1) In the 112 cases under consideration, the proportion of degenerates is greater in the male sex than in the female.

(2) The proportion of degenerates is greater in the "hebephrenic" type than in the "catatonic."

(3) In the "hebephrenic" type the proportion of degenerates is especially high in the male sex.

It is doubtful if the number of cases justifies more detailed deductions, and this remark especially applies to the "paranoid" type, which includes but 7 of the total of 112 cases.

The relative proportions of degenerates in the four classes of primarily neuronc dementia will now be considered. After what has already been stated in earlier sections of this paper it is hardly necessary to remark that important differences exist in this respect.

From the aspect of pure high-grade amentia, as has been remarked in the introduction to the second part of this paper (*Journ. Ment. Sci.*, July, 1905, p. 510), the age on certification, or the age at which the degenerate with neurones of average durability becomes unable to withstand the normal environment of sane individuals, depends on two factors—the resistance of the individual cerebrum, and the "stress" to which this is subjected—and is therefore an accidental detail which is of slight importance from the point of view of classification. In such cases an attack of certifiable insanity either adds another non-demented permanent inmate to the asylum population or results in the return to the outside world of a potential lunatic who is liable, under the influence of a relatively slight degree of "stress," to again become an asylum inmate.

When, however, the degenerate also possesses neurones of deficient durability, it is obvious that age-incidence possesses a greater significance, and that the proportion of degenerates to non-degenerates in the demented insane must be smaller at each successive period of life. In such degenerates a permanent loss of mind results from an attack of mental alienation, and therefore necessitates their certification sooner or later, whereas pure high-grade aments, with neurones of average durability, may suffer and recover from many attacks of insanity in their home environment before their friends are tired of the trouble they cause, or become unable to look after them.

The proportion of degenerates is therefore greater in premature dementia than in the other classes of primarily neuronc dementia. This is clearly shown in the following table :

Primarily neuronc dementia.	Males.		Females.		Total.	
	Proportion of degenerates.	Percentage.	Proportion of degenerates.	Percentage.	Proportion of degenerates.	Percentage.
Class (A), "premature"	29 in 57	50·9	21 in 55	38·2	50 in 112	44·6
Class (B), "mature"	6 in 26	23·0	3 in 34	9·0	9 in 60	15·0
Class (C), "presenile"	2 in 18	11·1	5 in 47	10·6	7 in 65	10·8
Class (D), "senile"	20 in 53	37·7	24 in 70	34·3	44 in 123	35·8

In the above table the "senile" or "worn-out" class contains a high proportion of degenerates, as it not only includes the ordinary senile cases and senile high-grade aments, but also the hitherto non-demented old asylum inhabitants and the cases of hitherto stationary "premature," "mature," and "presenile" dementia, who, with the onset of senility, have developed "senile" or "worn-out" dementia (*Journ. Ment. Sci.*, October, 1906, p. 717). As it is impossible to satisfactorily distinguish between all these types, the senile class is thus a mixed one, and the percentages given represent the proportion of physical and mental degeneracy which existed at a particular time amongst the cases of primarily neuronc dementia who had arrived at the senile period of life.

*Degree of dementia.*—The degree of dementia existing in the

class of premature dementia under consideration is represented in the following table :

Premature dementia,	Males.		Females.		Total.		Total per-centage.	
	Mild.	Mode- rate.	Mild.	Mode- rate.	Mild.	Mode- rate.	Mild.	Mode- rate.
Sub-class (1), "hebephrenic" .	15	17	14	18	29	35		
	32		32		64		45	55
Sub-class (2), "catatonic" .	6	17	5	13	11	30		
	23		18		41		27	73
Sub-class (3), "paranoid" .	1	1	4	1	5	2		
	2		5		7		71	29
Total . . . . .	22	35	23	32	45	67		
	57		55		112		40	60

Hence the "catatonic" form contains the highest percentage of cases which exhibit a moderate grade of dementia, namely, 73; the "hebephrenic" shows the lower percentage of 55, and the "paranoid" possesses the least proportion of the three, namely, 29 per cent. The total percentage of cases exhibiting a moderate degree of dementia in the class of "premature dementia" is thus no less than 60.

*The relative proportions of cases possessing a moderate degree of dementia in the four classes of primarily neuronc dementia.*—As has already been stated in the introduction to the description of this variety of dementia, and under the headings of the different classes which it contains, the actual amount of dementia is greater in the "premature" than in the "mature," and in the "mature" than in the "presenile" classes. The "senile" class, as has already been stated above, under the subject of degeneracy, falls under a different category, including, as it does, not only ordinary senile cases and senile degenerates with "worn-out" neurones, but also hitherto non-demented old asylum inhabitants, and cases of hitherto stationary "pre-mature," "mature," and "presenile" dementia, who, with the onset of senility, are also suffering from "worn-out" neurones.



The actual amount of dementia in the senile class is thus relatively high.

For simplicity of description, as the dementia in all the cases, with the exception of a small number belonging to the senile class, in which it is well marked, is of a mild or moderate grade, the number and the percentage of cases which exhibit a *moderate* degree of dementia will alone be detailed in the following table:

Primarily neuronc dementia.	Number of cases exhibiting moderate dementia.	Percentage
Class (D), "premature" . . .	67 in 112	60
Class (C), "mature" . . .	28 in 60	47
Class (B), "presenile" . . .	21 in 65	32
Class (A), "senile" . . .	68 in 123	55
Total . . .	184 in 360	51

A further question will now be briefly considered—namely, whether degenerates or ordinary patients develop the greater proportionate amount of dementia. The ordinary high-grade ament, as has frequently been stated, but especially in Part II of this paper, develops an attack of insanity so readily under the "stress" of "normal" environment that he does not overreach the durability of his cortical neurones, and consequently, according to circumstances, either recovers or becomes a permanent asylum inmate without the development of an appreciable degree of dementia. When, however, the high-grade ament *does* overstep the limit of neuronc durability, it is a matter of uncertainty as to whether a greater or a lesser degree of dementia ensues than that which occurs in an ordinary "normal" individual who has similarly overstepped the limit of neuronc durability. It is with the object of furnishing a reply to this question that the following data are inserted.

In the table which follows the cases of primarily neuronc dementia are grouped, under the four classes into which this type of dementia has been subdivided, into "normal" patients and high-grade aments. As all the cases, except a few of the senile class in which the dementia is well marked, suffer from a

mild or a moderate degree only, the latter grade alone has been considered in the figures and percentages, as the former is merely its complement.

Primarily neuronie dementia.	Proportion of "normal" cases exhibiting moderate dementia.	Proportion of high-grade aments exhibiting moderate dementia.
Class (A), "senile" .	37 in 79 = 47 <i>per cent.</i>	31 in 44 = 70 <i>per cent.</i>
Class (B), "presenile" .	20 in 58 = 34 <i>per cent.</i>	1 in 7 = 14 <i>per cent.</i>
Class (C), "mature" .	23 in 51 = 45 <i>per cent.</i>	5 in 7 = 56 <i>per cent.</i>
Class (D), "premature" .	38 in 62 = 61 <i>per cent.</i>	29 in 50 = 58 <i>per cent.</i>
Total . . .	118 in 250 = 47 <i>per cent.</i>	66 in 110 = 60 <i>per cent.</i>

The above data sufficiently indicate that high-grade aments, as a group, when they develop dementia, pass more frequently to the moderate grade than do "normal" individuals.

This conclusion is especially evident in the "senile" or compound class, and it is not supported by the "premature" cases, in which the neurones of both "normal" and degenerate patients have apparently suffered equally commonly from a moderate degree of dissolution.

The table further illustrates the relative rarity of degeneracy in the "presenile" and the "mature" classes, which observation renders it probable that such degenerates as have not succumbed to cerebral dissolution at the "premature" period of life have continued relatively unaffected until the "senile" period has been reached.

It is probable, therefore, that the *cause* of the main conclusion deduced from the data contained in the table is to be found in a greater tendency to "senile" or "worn out" dissolution of the cortical neurones on the part of the degenerates than exists in the case of the "normal" individuals. This explanation is rendered the more likely by the common observation that low-grade aments, as a rule, attain to senility at a comparatively early age, *e.g.*, even at forty years; in other words, that the cortical neurones of well-marked degenerates are especially prone to undergo early senile involution or "wearing out," even in the absence in many cases of an appreciable degree of "wear and tear."

It may, therefore, with a reasonable probability that the deduction made from the data contained in the table is correct,

be stated that the presence of physical and mental degeneracy (high-grade amentia) does not, until the "senile" period of life is reached, influence in any way the grade of dementia which follows an over-stepping of the limit of neuronc durability. When, however, the "senile" period has been attained, the presence of high-grade amentia in cases which have overstepped the limit of neuronc durability results in the more frequent development of a moderate grade of dementia than occurs in patients with "normal" cerebral development; and this result is due to a greater tendency to "senile" or "worn out" involution of the cortical neurones on the part of high-grade aments than exists in the case of "normal" individuals.

#### CLASS (D).

##### *Sub-class (1)—Premature Dementia—approximately "Hebephrenic."*

This sub-class contains sixty-four cases, of which thirty-two are males and thirty-two are females. It includes the cases of premature dementia in which "loss of mind" is the essential clinical feature, and which exhibit neither pronounced motor phenomena nor definite semi-systematised delusions. Further, in such examples as show a tendency to perform, or to repeat, certain acts, these (*cf.*, No. 595, p. 450) are usually "skilled" in nature, and are presumably mechanical remainders of what has formerly been learned and practised, rather than the results of imperfect learning or deficient practice, which are such obvious features of certain of the motor phenomena exhibited by cases of "catatonia."

The average duration of residence, in the case of either sex, is ten years; and the individual duration varies from one to thirty-four years in the males, and from one to twenty-nine years in the females.

Both owing to the duration of residence and to the existence of dementia, the cases fall into the category of "chronic"; and therefore, apart from the reasons adduced in the early part of the present section for the mode of treatment of the subject which is being adopted, no detailed description of precursory or "acute" symptomatology will be attempted. It suffices, with reference to this, to remark that, in the experience of the writer, all such cases, during the earlier stages of the attack of

insanity which resulted in their "chronic" mental condition, exhibited a greater or a lesser degree of mental confusion, and that the severity of this, in uncomplicated cases, bears a direct relationship to the grade of dementia which ensues (*Journ. Ment. Sci.*, July, 1906, pp. 427-490).

The symptomatology exhibited by the cases contained in this sub-class is that of stationary dementia, namely, "general dullness and apathy, a loss of initiative, and an indifference to their surroundings; a marked degree of stereotypism of all the mental processes, and an inability to learn new acquirements; a mechanical method of performance of known acquirements, a general stupidity and inability to understand when an attempt is made at correction of any kind, and a tendency to revert to accustomed modes of speech and action; finally, a tendency to the repetition of accustomed actions, which often shows that these have been performed in the entire absence of intelligent volition" (*ibid.*, p. 488).

This symptomatology is due, in the opinion of the writer (*Journ. Ment. Sci.*, April, 1906, pp. 221-271), to a more or less extensive dissolution of the centre of higher association and co-ordination in the prefrontal region, which is the latest developed and most important portion of the grey mantle of the cerebrum, and the first part to undergo dissolution under "stress" or normal involution; and the cases in the present sub-class, as a whole, exhibit, in probably a purer form than is seen in any of the varieties of primarily neuronc dementia, the results of this dissolution.

As will be seen from the illustrative cases inserted at the end of this description, the contents of the present sub-class include examples both of amentia, chiefly of the high-grade type, and of what were originally presumably "normal" individuals. Of the 32 males, no less than 20, or 62.5 *per cent.* are degenerates; and of the 32 females, no less than 13, or 40.6 *per cent.* Hence 33 of the 64 cases, or 51.6 *per cent.* are examples of low- or high-grade amentia—a larger proportion than occurs in the "catatonic" and "paranoid" sub-classes of premature dementia.

Whilst this observation points to the desirability of suitable (State) provision for the care and control of the feeble-minded, many of whom, under the ordinary environment of the "sane" members of the race, are liable to suffer from cerebral dissolution with resulting dementia, the corollary that 48.4 *per cent.*



of the cases were presumably of "normal" cerebral development shows that exceptional "stress" is equally harmful to these, and produces its quota of cerebral dissolutions. The latter point is probably the more important of the two, as such (non-demented) "normal" individuals would be of more use to the race than would such (non-demented) degenerates, and hence is suggested the desirability that greater attention should be attracted to the often disastrous results of over-training, even in subjects who are apparently of "normal" cerebral development.

The amount of dementia existing in the cases included in this sub-class is high, as many as 55 *per cent.* exhibiting a moderate grade. This, though considerable, is rather less than the percentage of 60 in the entire class of premature dementia.

Of the sixty-four cases in the sub-class forty-four were workers (twenty-five good, eight ordinary, and eleven poor), six refused to work, and fourteen were incapable of useful employment.

The following fourteen cases are inserted for illustrative purposes :

*Congenital Feeble-mindedness ; Mild Premature Dementia ; certified six years.*

CASE 539.—A. A—, male, single, æt. 35. Of no occupation. Feeble-minded from birth. Certified since the age of 29. Notes taken three days after admission.

A dull-looking man, of sleepy appearance. Forehead prominent, head large, ears small and without lobules, mouth small and lips thin. He gives his name, and states that his age was 27 on April 3rd last. He knows where he is, where he has come from, when he came, the present day, and the approximate date. He is very slow in giving replies to questions. He does not know the present year. He tells me, in reply to leading questions, that he went to school, and that he was in the eighth standard at the age of 15. When asked to multiply 12 by 9 he tries to work it out by counting on his fingers, and eventually says "10." To a question of  $4 \times 3$  he replies "8," after counting the same method. He however, again in the same way, gets  $2 \times 2$  correctly, but says that  $3 \times 3 = "6."$  When asked to say the alphabet he inserts two "l's" and misses out "u" and "v." He spells "horse" and "cow" correctly, but "elephant" is "eofin," and he does not attempt "asylum." He reads like a very young child, and, even after spelling them, entirely fails to make anything of such words as "attendant" and "commencing." He is dull and slow in all his movements, and exhibits none of the wayward intelligence and erratic or rapid movements and actions of the non-demented imbecile.

Whilst under observation he was a useful mechanical worker, and

was able to attend entirely to such personal matters as washing, dressing, the calls of nature, etc.

*Note.*—The patient differs from the imbecile and approximates to the dement in his general dulness, his sleepy appearance and the slowness of his movements, and in the general absence of initiative, either with or without the stimulus of sensorial excitation.

*High-grade Amentia ; Mild Premature Dementia ; certified five years.*

CASE 542.—T. W. C.—, male, single, æt. 23, errand boy. Certified since the age of 18. Father insane. Notes taken two days after admission.

A dull, sleepy-looking boy, who is biting his finger nails. Palate very high and chink-like. He gives his name with a slight lisp, and states that his age is 18. When asked to do so, he slowly and carefully writes his name. Many of the letters, and even parts of letters, are written singly and laboriously. All the dots are inserted, weak parts of certain letters are touched up, and a full stop is inserted after his Christian name. He seems then unable to put down the pencil, and after a long pause adds, in similar writing, "18 years old." During the writing he frequently pauses to lick the pencil. He reads well. He knows where he is and when he came. He states that the day is Friday (Saturday), and that the time is 2.30 p.m., after which he seems to remember the clock as he turns round to look at it (1 p.m.). He knows neither the month nor the year, and states that he was seven years (really five) in his previous asylum. He states that  $4 \times 5 = "20," 9 \times 6 = "42," 7 \times 2 = "14," 4 \times 5 = "20," 4 \times 7 = "28," 7 \times 5 = "35," 9 \times 6 = ?, 6 \times 9 = "78."$  His memory frequently fails during these and similar replies, and he then adds up, at times incorrectly, to aid himself to the result. He spells fairly well, such words as "house" and "elephant" being correctly rendered. He states that previous to going to an asylum he earned fourpence a week as an errand boy. During his residence he has "tried to do bed-making and house-cleaning, and sweeping and cleaning chambers."

Whilst under observation this patient was quiet and well behaved, and, though dull, a useful worker.

*Note.*—This case is a good example of mild premature dementia in a high-grade ament. The method of writing his name is sufficient in itself to enable a diagnosis to be made, and the evidence produced of his present attainments and previous education, though brief, for reasons of space, is more than enough for the same purpose. The present case thus differs from the previous one, in which, for a clinical diagnosis, a general knowledge of the behaviour and habits of imbeciles and of dements, rather than a special study of symptomatology, is needed.

*High-grade Amentia ; Moderate Premature Dementia ; certified twelve years.*

CASE 544.—G. H—, male, single, æt. 37. Certified since the age of 25, and stated to have been feeble-minded since birth. Notes taken two days after admission.

A dull, heavy-looking man, with a large and protruding lower lip, deep horizontal fissures on the forehead, and a vacant and expressionless stare. He is able to give his name, but does not know his age. He has come from "another place," and has been "in places like this a long time." He says that he has been to school, but does not know in what standard he was when he left. He cannot read or write. He volunteers the information that he has two brothers, and replies to a question that he has no sisters. On being asked why his front teeth are missing he says, "Too many sweets I expect." He states that he does no work and does not smoke. When asked to frown he is unable to do so. When asked why he has a slight contracture of his little finger he replies, "Squeezed in school door, a boy done this thing, a boy, pinched." He is dull and slow in all his movements, and walks with his head bent forward and with a very slow, shuffling gait.

Whilst under observation he was at times restless, shuffling about the ward, and being irritable if interfered with. He was quite unable to work, was dirty and untidy in his appearance, and, unless prompted and at times assisted, was unable to attend to his personal wants.

*Moderate Premature Dementia ; certified six years.*

CASE 547.—W. H. B—, male, single, æt. 32, labourer, and in army reserve. Certified since the age of 26. Notes taken two days after admission.

A fatuous-looking man who laughs in a silly manner when addressed. He takes little notice of his surroundings. When asked to frown he looks up and says, "That's all right." He notices that I am taking notes. When asked his name he replies, "Nothing, same as yours." Where have you come from? "You shouldn't make fools of people like you do." How old are you? "About 40." Married? "Yes." Children? "You needn't make a fool of us you know," and he then laughs in a foolish manner. He takes his food well, goes to the lavatory with the other patients, and dresses himself. He sits in the same place all day long and is quiet. He at times looks slowly around, and at others grins fatuously to himself.

Whilst under observation he was dull and listless, paid little attention to his surroundings, and was entirely unoccupied.

*High-grade Amentia ; Mild Premature Dementia ; certified eight years.*

CASE 550.—W. H—, male, single, æt. 29, boatman. Certified since the age of 21. Maternal aunt insane. Notes taken three days after admission.

A dull, sleepy-looking man. The cranium is low, the base of the skull is broad, the ears project, the mouth is large, the lips project,

and the palate is high and narrow. He gives his name, and when asked his age replies, "Asked yesterday I said 25 and he said I was more than 25." He knows where he is, but pronounces the name of the place incorrectly, and in a shortened and incomplete manner. He knows the day on which he came and the present day and date. He knows where he has come from, and states that he was there seven or eight years. When asked why he was incarcerated he replies, "Was sent there I suppose." When the question is repeated he says, "I don't know." When asked to write his name he does so in a slow and laborious manner. He corrects the imperfect letters and dots the "i's." Nearly every letter is written separately and in copy-book style. When I ask him to add his age, he slowly and carefully writes "25," the "curls" at the beginning of the "2" and the end of the "5" being elaborately made, and the "dash" at the top of the latter being long and well curved. I then ask him about the work he did in his previous asylum, and he replies that he wheeled coal and got "pretty fair" of tobacco for doing so. He does not know why he has been incarcerated for such a long time, and "it don't trouble me much."

Whilst under observation patient continued dull and apathetic and showed a marked lack of initiative, but he was a useful mechanical worker.

*Chronic Mania ; Mild Premature Dementia ; certified six years.*

CASE 551.—G. S—, male, single, æt. 28, railway porter. Certified since the age of 22, and showed symptoms a year previously. Grandfather and uncle insane. Notes taken two days after admission.

A dull-looking young man with an expressionless face and projecting ears. He gives his surname, and when asked his Christian name replies, "Suppose we say Claremont, there's a fortune there I believe. Take the evidence and obtain the notes" (apparently from noticing that I am writing in a book). Asked where he is, he says "cover place." When the question is repeated, he replies "There were a few pictures on the hill when I first knew it." When I ask if he has ever heard of C—, the asylum from which he has been transferred, he says, "Yes, I was employed there in the railway." When asked why he was incarcerated he states, "I expect I lived in a tower for a couple of years without anything to eat and that weakened my mind." He says, that it is 13 years now since he left the goods' office at H— (improbable). He knows the present day, the day when he came, and the date within a day. He then tells me that he was here one evening in March two years ago. (Certainly untrue.) In his previous asylum he "did a little wiping and washing up and did pillows and beds." He was there five years (six). His age is "70 to 80 years." He was 70 when he went to the asylum, "something like an old countryman, you know."

Whilst under observation he was on the whole dull and apathetic, but at times he became excited. He was a useful worker but showed great lack of initiative.



*High-grade Amentia ; Chronic Mania ; Moderate Premature Dementia ; certified thirty-three years.*

CASE 562.—G. H—, male, single, æt. 54, seaman. Certified since the age of 21. Notes taken three days after admission.

A smiling man with bright eyes. The left eye is placed lower than the right and there is facial asymmetry. There is marked intermittent contraction of the orbicularis palpebrarum. The tongue is enormous. The palate is within normal limits. The patient frequently makes clucking noises with his glottis and jerks his lower jaw forwards. He also frequently eructates. He laughs, mutters, and talks to himself. He gives his name indistinctly, and when the question is repeated he shouts out the reply at the top of his voice. He states that his age is 70. He knows the day and the day when he came. When asked where he came from he replies, "Train." When the question is repeated he says, "Off the metals." When asked if he has come from H—, he replies "Yes," and to a question as to how long he lived there he says, "Years, 70 years." Whilst there he worked at "lugging solids—coals." He does not smoke. All his replies are jerked out suddenly.

Whilst under observation he remained quite unchanged. He paid little attention to his surroundings and showed much lack of initiative, but he was a useful mechanical worker.

*Note.*—The habit-tricks of this patient, and his mode of speech, suggest that the case should, perhaps, have been included under "catatonia"; but a careful study of the case as a whole led to its inclusion in the present group. (See also note on Case 595.)

*Mild Premature Dementia ; certified six years.*

CASE 564.—D. D—, female, single, æt. 25, general servant. Certified since the age of 19. Maternal aunt insane. Notes taken two days after admission.

A pale, anæmic girl. Teeth irregular and badly enamelled. Palate narrow and deep. Some degree of red œdema of extremities, elbows, etc. Faint skin-cracks on abdomen.

Patient lies quietly in bed and bites her right hand and sucks her fingers. She rarely stirs, but speaks rationally, though childishly, in reply to questions. She knows where she is, and, roughly, how long she was in her previous asylum; and in reply to a question, she informs me that she did washing there. She has, at times, suffered from auditory hallucinations—voices "asking me to be good and that." She used, at first, to think that she had done wrong, and "did not do my work properly sometimes." She would have liked to go home, and used to *try* to work, etc. She often makes use of the word "try." She knows that she had a child some time ago, or thinks she had, but cannot give any information about it. She does not know whether it is alive, and "I do feel sometimes as if I would like to know if it is alive."

At times, when lying quietly, she moves her lips as if whispering to herself.

A few days after admission she began to do a little ward work. She was willing but extremely dull and slow.

Whilst under observation she became stout, but continued anæmic. She was dull, heavy, and phlegmatic, and had absolutely no capacity of initiation, though she answered questions readily enough. She was a willing worker but was better able to understand what was wanted of her than to perform it. She was slow and clumsy, and when, *e.g.*, she washed a floor, she often slopped the water about, wet her dress, and wiped very little of the water up again. She was, therefore, of little use except for unimportant and purely mechanical employment, and even then she required constant supervision.

*High Grade Amentia ; Moderate Premature Dementia ; certified thirteen years, and previously at the age of twenty-four. Sister of Case 576.*

CASE 575.—E. J—, female, married, æt. 41, of no occupation. Certified since the age of 28, and previously at the age of 24. Sister of Case 576. Great-grandfather insane. Notes taken on the day after admission.

Patient is a dull, apathetic woman, who shows fewer and less marked stigmata of degeneracy than occur in the case of her sister (Case 576). Forehead free from lines of any kind, hair light grey, palate high and narrow in front, teeth poor, skin cracks on abdomen.

She at times laughs in a silly manner, and on these occasions her forehead remains unaffected. She states that her age is six. When asked her name she says that she does not know and then adds, "an invalid." When asked if she is married she shows me a button on her night-dress and mutters something inaudible. She then asks "would you like me to put my name on that little bit of biscuit?" She later makes such remarks as "the publisher wants his money, the Prince of Wales," "glad you got home," "sixteen years since," and "don't you feel all right like that," and tries to cover herself up in bed.

Whilst under observation patient remained dull, apathetic, and uninterested in her surroundings. She occasionally talked a little to herself. She was unable to perform work of any kind, and was only imperfectly able to attend to herself.

*High-grade Amentia ; Echolalia ; Moderate Premature Dementia ; certified three years, and previously at the age of 27. Sister of Case 575.*

CASE 576.—E. A. B—, female, single, æt. 34, of no occupation. Certified since the age of 31 and previously at the age of 27. Sister of Case 575. Great-grandfather insane. Notes taken on the day after admission.

Patient is of similar type to Case 575, but is of much more markedly degenerate appearance. Forehead receding, hair very grey, palate very high and square at the canines, teeth fair, mouth large and open, lower lip very pendulous, ears lobuleless. She is extremely narrow between the anterior superior iliac spines.

A dull, stupid-looking woman, who appears to be much older than her stated age. She calls herself "E. A. W." She is not married but wants to be. She scratches her face and smiles, or at times sighs. To questions she replies, "yes, yes," "what's matter," "I don't think it's my fault," etc. She says that her age is 60 and that she is "at Hampstead in John Street." To a further question she replies that she was at Hampstead yesterday and therefore does not seem to remember anything about her journey here. To a later question she says she does not know where she is now. She names the day correctly and says that "it looks like winter" (August) when asked the month. The year is "1888, 1860, 1880," (1903). She is "5 years old yesterday" (*cf.* her sister's remark that her age is 6). She differs from her sister in exhibiting well-marked echolalia, repeating, with alteration of pronoun, practically every question put to her.

Whilst under observation patient was dull, listless, and apathetic, and took absolutely no interest in her surroundings. She was unemployed and was hardly able to do anything for herself. She thus exhibited a somewhat greater degree of dementia than her sister.

*Chronic Melancholia ; Mild Premature Dementia ; certified five years.*

CASE 578.—A. M. M—, female, single, æt. 28, cook. Certified since the age of 23. Notes taken on the day after admission.

Upper lip prominent. Nostrils thick and round. Palate shelves forwards markedly. Well-marked lateral spinal curvature. Breasts virginal. No skin cracks on abdomen.

A very depressed and apathetic woman, who, when asked if she is a cook, states that she was a nurse at G— hospital for ten months in the surgical wards. She broke down with the work and returned home. She stayed at home for two years, and then went out again to nurse a lady who was suffering from influenza. She herself contracted the disease, fell into a low state of health, and attempted suicide by cutting her throat. She was then removed to the asylum. She was at that time about 24 years of age, and was 29 on her last birthday. When asked how she became a probationer in that particular hospital at such an early age, she states that she led the authorities to suppose that she was a good deal older than she was. Ever since she went to the asylum she has been "dull through being physically and morally ruined." She has been "more sinned against than sinning." When then asked as to immoral relations with men, she replies, "Yes, several." She feels that she will never recover from her dulness and depression. She does not suffer from hallucinations. Her knowledge of time and place is accurate and her general memory is practically normal. She is, however, dull, slow, depressed, and apathetic, is very slow in her mental processes, and shows much lack of initiative.

Whilst under observation patient continued mentally unchanged. She showed much mental hebetude but was a useful worker. Judging from her education and mode of speech it is probable that she had developed at least a slight degree of dementia, and had been originally of more than average intelligence.

*High-grade Amentia; Moderate Premature Dementia; certified fifteen years.*

CASE 583.—A. E—, female, single, æt. 39, domestic servant. Certified since the age of 24. Notes taken three days after admission.

A blank-faced woman, with bright eyes, ears without lobules, and a high palate. She has a pleasant but fatuous smile. She takes very little notice of me and cannot be got to reply to questions. She cannot handle a pencil, and she holds her hands as if she had not used them for years, which is also probable from their general appearance. When pressed by questions she eventually remarks, "Get away," and then gabbles on to herself in an entirely unintelligible manner, saying a few words at a time, playing with her dress, her fingers, etc., and taking no further notice of me.

Some months later she showed very little, if any, change in her mental condition, which was as follows: She mutters in a partially intelligible and nervous manner. She plays with her fingers and dress, and jerks her arms about like a nervous child. She *can* speak plainly, as she says, "I don't want to sit down, I don't want anybody." "Jack's not Jack"; "no material feeling." She appears to have talked so much to herself that it has eventually become a habit not to articulate clearly. At times she laughs, but she soon relapses into such, at times monkey-like, habits as examining her fingers or the buttons on her dress, blinking, gazing down on the floor, etc.

She is fairly tidy and dresses herself, but she does not make her bed. She is at times noisy. She is occasionally wet in her habits. She is unemployed, except for doing a little rubbing sometimes, and on these occasions she tends to work at the same place unless she is moved on.

*Chronic Mania; Moderate Premature Dementia; certified eight years, and twice previously since the age of 17.*

CASE 585.—E. L. T—, female, single, æt. 30, of no occupation. Certified since the age of 22 and previously on two occasions, the first of which was at the age of 17. Paternal uncle and maternal great-aunt insane. Notes taken two days after admission.

A frowning, untidy girl, who rapidly settles down to complete apathy with her head bent on her chest. Her palate is high, and deep in front, and her extremities are cold and blue. She gives her name and states that her age is 27. She speaks very childishly and looks about 20 years old at the most. When asked to write her name and age she does so in exactly the manner characteristic of cases of premature dementia, which has already on more than one occasion been referred to, in the description of Case 550 for example. She says that she has come from the West Indies, and that she came "a long time now" ago. She has heard of the name of her last asylum but does not know how long she was there. She has an extremely dull appearance, but she frequently frowns. She takes little or no voluntary notice of her surroundings, and is wet in her habits.

Four months later there was little or no change in the patient. This is evident from the following description: Her face is screwed into



an almost perpetual frown. She gives her name and states that her age is 22. She knows neither the day nor the date, but thinks that it is winter (February). She replies, "I don't know" to practically every question put to her. She usually sits all day long with her arms folded and her eyes shut, and with her head bent forwards, and her chin touching her sternum. Her extremities are blue and toneless. She is occasionally wet in her habits. She dresses herself and at times makes her bed. She never reads but she has written two letters to her friends. Sometimes she is very excitable, spiteful, and impulsive, and she has smashed more than once. She also, on these occasions, uses foul language. At times she has worked very well for about a week, and she can make beds very nicely, although she rarely does so.

*Verbigeration. Moderate Premature Dementia ; certified eleven years.*

CASE 595.—J. C—, female, single, æt. 36, housewife. Certified since the age of 25. Cause stated to be "confinement." Sister insane. Notes taken two days after admission.

A dull, sullen woman, who sits quietly and takes no notice of her surroundings. She is stout, and is phlegmatic in appearance and behaviour. No skin-cracks on abdomen. Marked corns on knees. She gives her name, and, when asked her age, replies, "10 years old, 10 years old. I'm 10 years old, 10 years old . . . 10 years old . . . 1899." Where are you? "I know what you want to know, nothing, all right." Who is that? (a patient). "That's Jane Potter . . . nothing" (untrue). Who is this? (a nurse). "That's Ethel, Alice, Alice, Alice" (untrue). What is the day to-day? "Saturday. To-day is Saturday, Saturday, Saturday" (correct). She rocks to and fro as she talks. Where do you live? "Where's Peter, poor old Peter? Yes, all right, Peter, poor old Peter." Where have you come from? "H—s, H—s, seaside, H—s. . . H—s. H—s. . . H—s. . . Came from H—Hh asylum. That's right. H—Hh asylum, you devil. H—Hh asylum. . . H—Ih asylum." When not asked questions she laughs and whispers to herself.

The following notes were made some months later: She is dull and phlegmatic, and sits and plays with her fingers or a bit of thread. She replies in a similar manner to questions, e.g., Do you sleep? "Me, I don't sleep. I never sleep. I never do nothing. Oh! dear, dear, I never do nothing." In playing with the string one notices that she does it in a mechanical but "skilled" manner. The action is, in fact, a mechanical remainder of what she has formerly learned and practised.

As regards her general behaviour, she is at times inclined to be spiteful. She often makes grimaces, and laughs to herself. She has a habit of throwing out of the windows everything she can lay her hands on, on the ground that it is dirty. She, in fact, thinks that everything is dirty and should be thrown away. She often repeats one or two words, e.g., "beautiful," "Pretty Eliza"; and when irritated she repeats one or two phrases, e.g., "Dirty looking thing, I'll make you run," and "I'll cut your ear-holes off." She is clean in her habits and fairly tidy,

and she attends to herself. She is a bad bed-maker, but is moderately useful at sweeping and dusting. If asked to do anything she invariably replies "Yes, all right." She sews if everything is got ready for her, and she is very fond of unpicking.

*Note.*—Like Case 562, this case approximates somewhat to "catatonia" in symptomatology, especially in the verbigeration and the tendency to mechanical repetition of certain actions. As, however, the "Frankenstein" or "mechanical model" is not suggested by these actions, both cases have been included under the present sub-class. The detail that the insanity of Case 595 was apparently precipitated by confinement is, in the opinion of the writer, as has already been stated, merely an unimportant etiological episode, for such a factor, even if followed by a general toxæmia, has no necessary bearing on general symptomatology.

#### CLASS (D).

*Sub-class (2). Premature Dementia—approximately "Catatonic."*

This sub-class contains 41 cases, of which 23 are males and 18 are females. It includes those cases of premature dementia which, in addition to "loss of mind," are further characterised by the exhibition of pronounced motor phenomena.

The age on certification varies from 15 to 29 years in the case of the males, and from 19 to 27 years in the case of the females. The earliest age of onset, on such information as is available, is 15 years in the case of the males and 17 years in the case of the females.

The average duration of residence is 8 years in the males and 9 years in the females, and is thus only slightly less than that in the preceding sub-class. The individual duration varies in the males from 1 to 21 years and in the females from 1 to 30 years. There is, therefore, no evidence that the average duration of life in the cases belonging to the present sub-class is appreciably affected by the clinical type of the symptomatology.

All the cases exhibit, to a greater or a lesser extent, the symptomatology of stationary dementia, which was briefly summarised in the preceding sub-section, and, in addition, show certain characteristic motor phenomena. It is not proposed here to give a complete list of these motor phenomena, but

merely to briefly enumerate such as are exhibited by the illustrative cases which are cited at the conclusion of this description, as these are sufficiently varied to serve the purpose the writer has in view.

They are as follows :

*Anergic stupor*, where the limbs are absolutely flaccid, and from which the patient may, however, awaken to perform such lower voluntary functions as attending to the calls of nature, taking food, etc.

*Simple cataleptoid states*, in which the limbs may purposively, accidentally, or by outside influence, assume all kinds of unnatural positions, and maintain them for lengthened periods of time.

*Semi-voluntary cataleptoid states*, in which the positions are partly under voluntary control and are largely maintained by an effort of attention. As an example of the simpler type, if one arm be raised by the observer, it remains where it is placed, but gradually falls under the influence of gravity ; if the second arm is then raised the first at once falls. As an example of the more complex type, one arm may be raised and remain so ; when a second is raised both remain as placed ; when the mouth is then opened by suggestion to the patient by one of the several methods in vogue, it remains open and the arms continue immobile ; when, finally, a particular leg is raised, either by the observer or at his suggestion, the mouth completely relaxes, and the arms partially relax. [In many such cases persistent prompting enables much useful mechanical work to be performed.]

*Resistive stupor* and *stubbornness*, in the former of which the patient forcibly resists every extraneously attempted movement, and in the latter almost invariably does the reverse of what is suggested or required.

*The sudden striking of attitudes and the performance of forced movements and actions*, which in chronic cases are stereotyped and habitual ; also the perpetual exhibition of such muscular positions as *frowning* or *pursing the lips*.

*Repetition* of such movements and actions as are performed, and an apparent *inability to cease*.

*Impulsiveness* and *aggressiveness*.

*Hebetude* and *delayed replies to questions* ; also *echolalia*, with or without change of pronoun, this last being apparently a

similar phenomenon to what is in some persons a normal mode of assisting themselves to the understanding of a question, by the aid of further centres of lower association.

A tendency to *reply to questions and then to spell out the reply*, and even to repeat the reply; also *verbigeration*.

*Extraordinarily rapid cerebration*, with instantaneous replies to questions, or with no reply at all if the question is not abruptly and rapidly put.

*A peculiar method of writing*, which includes one or more of the following characteristics: Delay in commencing to write, and hesitation as to where exactly to start; great care both in writing and in correcting, completing, and "touching-up" what has been written; a tendency to write without performing the normal movement from left to right; inability to leave off writing and put down the pencil; and, finally, a tendency to repeat the writing, or certain letters or words, over and over again.

*A general absence of smoothness and refinement* in all the movements and actions which are performed.

The above symptoms indicate, in the view of the writer, a functional disturbance, and, in most of the cases, a partial dissolution of the neurones of the psycho-motor area of the cortex cerebri, and also demonstrate that the different associated groups of neurones, by insufficient exercise, owing to the age of the patient, are imperfectly organised into stable complexes, and, for the same reason, are under incomplete or imperfect voluntary control. The pathological condition is thus, on the one hand, one of sub-evolution of function, and, on the other, one of dissolution or involution; and a more extensive tract of cortex cerebri is therefore involved in the pathological process than occurs in the "hebephrenic" type of premature dementia.

The motor phenomena resemble, in brief, those which would occur in a "Frankenstein" (<sup>1</sup>) or "mechanical model," in which certain parts were imperfectly fashioned; in which certain groupings of parts were imperfectly tested and not in proper running order; in which the higher mechanical complexes were imperfectly controlled and co-ordinated into series, and, therefore, tended to stop, to repeat action, or to go by fits and starts; and in which, owing largely to the existence of several sources of motive power (*i.e.*, from the different organs of sensation), certain mechanical complexes tended to run



independently in consequence of an imperfect general co-ordination of, and control over, the whole mechanism. The motor phenomena are thus varied, and are, on the whole, of a distinctly positive or a definitely negative nature; and repetition, wayward and grotesque action, etc., are common.

In chronic cases the phenomena are often still further complicated as regards an immediate explanation, but simplified as regards their actual exhibition, by a more or less extensive dissolution of neurones, which results in stereotyped motor remainders of former "skilled" accomplishments. These, occurring on the dissolution side of the scale, differ in character from the erratic, grotesque, repeated, mechanical-model-like, and often "unskilled" movements which occur on the sub-evolution side and are due to imperfect control and insufficient practice.

The above remarks on the general pathology of the "catatonic" sub-class of premature dementia, point, in the opinion of the writer, to a more extensive process of neuronic dissolution than occurs in the "hebephrenic" sub-class; and this view is supported by the amount of dementia which is found in the cases belonging to the former. Whilst in the "hebephrenic" sub-class the percentage of cases which exhibit at least a moderate grade of dementia is 55, this percentage amounts in the "catatonic" sub-class to no less than 73, which is at the same time much higher than the percentage of 60 in the complete class of premature dementia.

The writer thus feels justified in regarding the "catatonic" form of premature dementia as merely a more extensive grade of cerebral dissolution than the "hebephrenic"; and in holding that it exhibits such distinctive motor phenomena on the one hand through immaturity or sub-evolution of—and consequent deficient stability of, and incomplete higher control over—the neuronic complexes of the psycho-motor area, and on the other to the existence of stereotyped motor remainders of a "skilled" nature consequent on the survival, during the process of cerebral dissolution, of local and relatively stable neuronic complexes.

From the latter (dissolutive) aspect in mental disease generally, and from the former (developmental) aspect in many of the types of high grade amentia but especially in the class of "cranks and asylum curiosities," the homology between these motor phenomena of catatonia and the psychic phenomena

which are due to affections of the various centres of lower association (including hallucination), is obvious, and affords support to the opinion of the writer (*Journ. Ment. Sci.*, April, 1906, p. 268, and *Brain*, Summer, 1903, pp. 217, 218) that the psycho-motor area is also a centre of lower association, and not a projection sphere.

As might be expected from the above remarks on the general pathology of "catatonic" motor phenomena, the histological evidence hitherto obtained has been positive and negative in the hands of different observers. The purely developmental or sub-evolutional phenomena of the "Frankenstein" or "mechanical model" nature, being due to a deficient stability of neuronc groupings owing to insufficient practice in the co-ordination and control of the complex physical bases of the "skilled" movements evolved, have necessarily no morbid histological features capable of detection by the methods at the disposal of the neuro-histologist; and hence the entire absence of gross morbid appearances, in the psycho-motor area of cases which exhibited during life marked cataleptoid phenomena, is only to be expected. On the other hand, well-marked morbid appearances in the cortex cerebri—especially obvious in the Betz cells—of cases possessing considerable dementia, and, at the same time, exhibiting special stereotyped motor remainders of former "skilled" movements, are naturally found in association with general prefrontal and frontal cortical dissolution; but, with our present knowledge, at any rate, it is impossible to isolate relatively normal physical cell-groupings for such motor remainders amongst the complex galaxy of normal, and partially or completely disorganised, cell-elements in the psycho-motor area. It is, however, likely that the histological study of cases, selected according to the general type of the motor phenomena exhibited by them, may, even by the employment of the neuro-histological methods at present at our disposal, lead to fruitful results in the near future.

The present sub-class, like the last, includes both presumably "normal" individuals and degenerates. In the male sex the percentage of high-grade aments is 30·4, in the female, 39·0, and in the whole sub-class, 34·1. This last is much lower than the corresponding percentage of 51·6 in the "hebephrenic" sub-class, and considerably lower than the percentage of 44·6 in the total class of premature dementia. Such a result is

*a priori* to be expected, as more extensive dissolution naturally occurs when the breaking-strain of the relatively normal cerebrum is reached by over-training, than follows the attainment of the less severe breaking-strain of the cerebrum of the degenerate. A considerable proportion of high-grade aments, in fact, break down so readily under the "stress" which is the normal environment of the sane, that they sustain no appreciable neuronie damage, and convalesce, only again to relapse, until they finally become permanent and non-demented asylum inmates.

Of the forty-one cases in the present sub-class sixteen were workers (eight good, two ordinary, and six poor), eight refused to work, and seventeen were incapable of useful employment.

The following twelve cases are inserted for illustrative purposes:

*Attitudes and Forced Movements; Stubbornness; Impulsiveness; Rapid Cerebration; Mild Premature Dementia; certified four years and previously at the age of 15.*

CASE 596.—W. E. W—, male, single, æt. 25, clerk. Certified since the age of 21 and previously at the age of 15. Notes taken three days after admission.

A dull, heavy looking man. Palate high, and narrow in front. He takes little or no notice of me, but replies to short, sudden, and rapidly-spoken questions. He knows where he is and where he has come from. He cannot say when he came but asks me if I have forgotten. He then guesses several days in succession and all wrongly, and afterwards talks on to himself in short sentences: "Why shouldn't it be? . . . Is it absurd that . . ." etc. He has been at his previous asylum four years and three months. He knows the present month and year but is four days wrong in the date. He gives his age correctly. He did gardening at his previous asylum and got cigarettes from home and tobacco from "one of the officials, a young fellow there." It is impossible to get replies to questions unless he is asked sharply and rapidly, in which case he replies in kind, as otherwise he mutters to himself and takes little or no notice. Occasionally after a question he talks on apparently quite incoherently; the sentences are, however, short and grammatical, and it is probable that several intermediate ones are missed out in such a way as to render it impossible to follow the association of his ideas. He informs me that he passed all the standards at school. He was then a clerk for seven years, during which he lived in three different towns. He was only in his last situation three months. When he begins to reply to questions the answers come so rapidly, and his attention so quickly fails, that it is difficult to cerebration rapidly enough to understand the replies and state another question in time to retain his fleeting attention, and render the conversation consecutive,

At the time the above notes were taken the patient had exhibited no definite motor phenomena beyond partial stupor, and a general tendency to stubbornness when anything was required of him. In a few days, however, he was noticed to stand for long periods in forced attitudes, and to be aggressive and at times impulsive. Whilst under observation such phenomena were of common occurrence, and were especially noticeable at entertainments, etc. He would suddenly kneel on the floor with upraised hands, or stand in cataleptoid attitudes, and keep up these positions for long periods. Similar phenomena were also at times exhibited whilst at exercise. He was a worker of ordinary type but was at times untrustworthy, very stubborn, and aggressive. Mentally he continued quite unchanged, either cerebrating with extraordinary rapidity, or taking absolutely no notice of any questions put to him.

*Verbigeration ; Moderate Premature Dementia ; certified twenty-one years.*

CASE 597.—H. W—, male, single, æt. 42, porter ; certified since the age of 21. Notes taken four days after admission.

A dull-looking man with bright, prominent eyes. Horizontal wrinkles on forehead. Palate is V-shaped and shelves forward. Teeth good but irregular. When asked his name he makes no reply. When his name is mentioned he replies "Yes, Yes." He then looks up, notices what I am doing, and smiles. Where are you ? "No, No." Where are you from ? "E—, E—." What is your name ? "W—, W—." He thus replies readily to a question, of which shortly before he took no notice, as soon as he has begun to speak. What is your age ? "Oh, I'm sure I don't know, sure I know." Are you married ? "No, No, No, No." Do you know H— ? (his previous asylum) "Yes, Yes, Yes, Yes." Have you any children ? "No." Have you any children ? "No, No, . . . No, No." Did you work at H— ? "No, No, No." Do you smoke ? "No, No." He occasionally smiles in a silly manner during the conversation. Did you strike any one at H— ? "Oh, no ! Oh, no !" and laughs. Were you in the padded room ? "No, No, No, No, No." Nothing further can be got from him, and, if he is smiled at, he laughs in a vacuous manner.

Whilst under observation he was dull, stupid, uninterested in his surroundings, and unemployed, and required prompting, and at times assistance, before he would attend to himself and his bodily functions.

*Partial Stupor ; Attitudes ; Mild Premature Dementia ; certified five years ; and showed symptoms for at least six years previously.*

CASE 599.—A. S—, male, single, æt. 39, gardener ; certified since the age of 34, but showed symptoms for at least six years previously. A paternal relative insane. Notes taken two days after admission.

Patient sits staring vacantly forwards and upwards, with the head thrown back, and the muscles of the front of the neck prominent. His lips are compressed, and at times he nods and slowly closes and opens his eyes. He is very slow in replying to questions, but gives his surname and his Christian name. He says that his age is 20. He knows



where he is and where he has come from, and he states that he was in that asylum for four or five years. When again asked his age he repeats that he is 20. His limbs can be fixed in cataleptoid positions by stroking the necessary muscles, but these are not now (voluntarily) assumed.

Whilst under observation, the patient, as a rule, stood for practically the whole day long, in the same attitude, and, as far as possible, in the same places. By judicious and persistent prompting he would at times perform such simple mechanical acts as carrying coals, etc., and could similarly be got, and at times more readily, to attend to himself. Such actions as he performed resembled, in their absence of smoothness and refinement, those that might be carried out by a mechanical model. Whilst under observation the patient remained in exactly the same condition.

*High-grade Amentia ; Repetition of Movements ; Simple Habit Tricks ; Moderate Premature Dementia ; certified eleven years.*

CASE 600.—C. F—, male, single, æt. 39, labourer ; certified since the age of 28. Mother insane. Notes taken three days after admission.

A vacuous-looking man, with a badly-developed lower face, teeth separated by gaps, and a large, partially bald, cranium. He constantly talks to himself and carries out habit-tricks, such as holding a piece of paper in one hand, and alternately turning it over, and moving the other hand up and down, to and fro, or round and round the piece of paper at some distance away from it. When asked to write his name he does so, but it is almost impossible to read what he has written, as he so exaggerates, and repeats over itself so many times, the beginning and end of each letter he writes. He also duplicates the "e" in "Charles." He writes his age as "35." Whilst writing "age" he seems quite unable to leave the "g" alone, and after writing the "5" he proceeds to cover it over with fine curled lines until the letter is practically invisible. This was probably owing to his not being prompted to write anything further, and to his being quite unable to take the pencil off the paper without being told to do so. As soon as the pencil has been taken from him he develops a vacuous grin of satisfaction. He is extremely garrulous. He is "not a married person, but I have a brother and sister married." He speaks inconsequently about asylums, convalescent homes, and sanatoria, and he asks me if this place is C— or M— (names of asylums). He thinks he has been away from town (H—) for about five years. Have you done any work ? "With a piece of iron on a stock" (probably a farm or garden implement). He tends in his replies to questions to say the reply and then to spell it out, and he even at times repeats the spelling. Whatever he says or performs, he cannot leave alone, but tends to repeat the words or actions over and over again. During conversation he hardly ever stops twirling his right hand about or moving it around at different angles. When asked about hallucinations he replies : "People come close to me and give me stones, and I wet them in my mouth and spit them out."

Whilst under observation the patient was mentally unchanged, and he was practically useless as a worker.

*Note.*—The tendency to repetition of movements, the simple habit-tricks, and especially the method of writing, which are exhibited by this patient, are worthy of attention.

*Resistive Stupor ; Impulsiveness ; Mild Premature Dementia ; certified five years.*

CASE 603.—A. V—, male, married, æt. 34, brick-maker. Certified since the age of 29. Notes taken three days after admission.

A blank faced man who sits with his head bent forwards, or tries to turn away from me, or to get up and go away. As soon as he settles on his chair he looks downwards with wide open eyes and dilated pupils, and exhibits an intent expression which resembles that produced by fear. His attention can only be momentarily attracted, and when he is intently gazed at he gradually begins to exhibit tremor of the head and neck as a result of the great rigidity of his muscles. He is extremely resistive. There is no tendency to a cataleptoid state, but if the limbs are raised they remain in this position owing to their extreme rigidity. He either takes no notice of questions or replies quite suddenly, e.g., "I sleep very well, sir." He therefore, at any rate, at times, hears and understands, and can reply to what is asked of him. When I tell him that I have done with him he gets up and goes at once.

Whilst under observation the patient continued unchanged mentally. He was at times violent and impulsive and he was totally unemployed.

*Note.*—This case, in many respects, presents a great resemblance to Case 596.

*Partial Stupor ; Moderate Premature Dementia ; certified two years, and previously at the ages of 25 and 23 years.*

CASE 604.—P. T. M—, male, single, æt. 28, private in the army. Certified since the age of 26 years, and previously at the ages of 25 and 23 years. Notes taken four days after admission.

A sleepy man who looks up when told to do so, and who makes grimaces when asked to put out his tongue. He gives his name and states that his age is 24. He speaks in a whisper. At times he smiles in a vacuous manner, moving the left side of the face more than the right. He is very slow in replying to the simplest questions, and nearly all the information he supplies is either inaccurate or inapposite. When, for example, he is asked if he knows anyone here, he remarks "Plenty to do." He sits all day in one position and does not voluntarily move, even for meals. He does nothing for himself, frequently masturbates, and is wet and dirty in his habits. His bodily health is satisfactory.

Whilst under observation he gradually recovered from his stupor, and though very dull, phlegmatic, and uninterested in his surroundings, became a useful worker.

*Verbigeration ; Echolalia ; Moderate Premature Dementia ; certified six years and previously at the age of 21.*

CASE 605.—G. P.—, male, single, æt. 30, grocer's assistant. Certified since the age of 24 and suffered from a previous attack at the age of 21. Aunt insane. Notes taken two days after admission.

A vacant-looking man who stares about him, occasionally smiles in an insipid manner, and fidgets with his hands. When asked his name he replies "P—, P—." Christian name? "Christian G— P—." Where are you? "Where am I?" He reads the name of the asylum when shown it. He came here "3—4—5 years ago," and still seems to think that he is in his previous asylum, though he points to and speaks the name of the present one. How old are you? "How old am I? 27—28, yes." He says that he can work, in reply to a question. At his previous asylum he worked in the garden? Did you get tobacco? "Tobacco. Yes, little pieces." Often? "Why, three times a week, yes." Do you hear people talking to you? "Yes, talk at night. Yes, they talk you know. Yes." He owns that he has been a troublesome patient, and uses such expressions as "Giving way," "Breaking out," "Smash," "Windows and such things," "Yes, Yes." During examination he has a piece of bread in his left hand, and he persists in holding it whilst he dresses.

Whilst under observation the patient showed no signs of mental change and was dull, listless, apathetic, and quite unemployed.

*Semi-voluntary Cataleptoid State ; Some Premature Dementia ; certified nineteen years and previously in an asylum.*

CASE 623.—C. R.—, female, single, æt. 44, of no occupation. Certified since the age of 25, and had previously been in an asylum. Notes taken on the day after admission.

A woman with a dry skin, a mask-like face, and many fine, horizontal wrinkles on her forehead. She holds her hands, which are cold and blue, in more or less constrained positions. She grins in a silly manner at times. She sits up, puts out her tongue, and does generally as she is told. She otherwise sits quite still except for a more or less constant slow movement of the eyes, and an occasional smile. There is partial cataleptoid rigidity of the limbs. This is by no means marked, as occasionally, whilst I am moving her limbs about, a few (involuntary) movements of the extremities occur. Further, the limbs gradually fall to the bed under the influence of gravity, though if so placed as to be least subject to this force, *e.g.*, in the vertical position, or so curved as to be best supported by the resistance of tendons and ligaments, they remain for a considerable time practically immobile. Again, when one limb has been fixed, it tends to undergo relaxation when that on the other side is placed in a similar position. It is probable, therefore, that in at least many instances the cataleptoid condition is semi-voluntary. The patient takes no notice of questions, and except for an occasional smile, which at times appears to exhibit a certain degree of slyness, takes no interest in her surroundings.

Whilst under observation patient continued unchanged. She was totally unemployed, but would feed and dress herself.

*Verbigeration; Attitudes; Moderate Premature Dementia; certified thirty-one years.*

CASE 628.—F. S—, female, single, æt. 51, occupation unknown; certified since the age of 20. Notes taken two days after admission.

A vacant-looking but restless woman, who mutters to herself and plays with her hands. She frequently strikes attitudes. She often makes such remarks as "Yes," "Yes, is it?" "Yes, is it?" "Say it," "Yes, is it? . . . it is," "What is it, no?" "Yes," "See," "To see," etc. When spoken to she becomes more restless, but she makes no replies beyond such as have just been stated. She often sits for long periods with her head bent forwards.

Four months later her condition was as follows: She is dull in appearance, and at times looks around her. She replies to questions by means of a few partially-intelligible words which are spoken smartly and in jerks—e.g., "Yes, yes, three years," to a question as to where she is. Who is that? (a nurse) "Yes, yes, that is." What is your name? "I call." It is very difficult to catch what she says. She accepts such names as "Mary," "Susan," etc., although they are not correct. On one occasion, when asked why she did not reply, she said "because I wouldn't." She frequently strikes attitudes. She sits in one chair all the day long. She is noisy at times but does not swear. She never works. She occasionally undresses herself. She never reads or writes. She can find her way about the ward, but she never goes alone. She never asks to go to the lavatory, but she goes when the others do. In the mornings she partially dresses herself. She has once or twice been wet in her habits.

*High-grade Amentia; Stupor; Salivation; Moderate Premature Dementia; certified four years.*

CASE 632.—G. K—, female, single, æt. 26, domestic servant. Certified at the age of 22. Notes taken two days after admission.

A dull-looking woman of vacuous appearance. Some asymmetry of the face, the right eyebrow being higher than the left. Forehead very peaked, i.e., each side falling rapidly away from the metopic suture. She sits with her hands doubled up, the thumb lying inside the flexed fingers, and takes no notice of her surroundings. She states her name in a childish whisper, and, when asked to write it, does so slowly and laboriously and in copy-book style, the details resembling those already referred to and described in previous cases as characteristic of patients who have learnt to write properly and have afterwards developed premature dementia. She rarely says more than one or two words in reply to questions, and usually merely whispers a "yes." She is very slow in replying to questions, and the responses are, as a rule, quite incorrect. She salivates a good deal. She feeds herself with a spoon and partially dresses herself. She is clean in her habits and follows the other patients to the lavatory.



Whilst under observation the patient remained unchanged; she was dull, apathetic, semi-stuporose, and entirely unemployed.

*High-grade Amentia; Attitudes; Explanatory Delusion; Some Premature Dementia; certified six years.*

CASE 635.—A. L. M—, female, single, æt. 33, servant. Certified since the age of 27. Notes taken on the day after admission.

A morose-looking woman with a small moustache and beard, ears without lobules, and the general appearance, except for complexion, of a Red Indian. She states her name, speaking with a lisp, and gives her age as 36. She knows that she came here yesterday, where she has come from, and that she was in that asylum for six years and seven months. She informs me, in reply to a question, that she cleaned the bath-room whilst there, but she adds that it was not she herself who worked but a machine which walks about as her, because *she* would not do "county work." "This machine goes and walks about and does things I don't want to do." She has had the machine in her all her life. When asked about hallucinations she denies them, but she states that "men come about and pretend I am a person I am not." She knows the day correctly, and states that the month is "September or October" (October). She does not know the date or the year. She is spiteful, and has already several times spit and scratched. She is untidy as regards her hair. She is clean in her habits.

Four months later the patient continued unchanged. She usually sat still all day, or stood looking out of the window, and always in more or less forced attitudes, which she was constantly striking. She spit about a good deal and often rubbed it on her dress. She did no work, and though she dressed herself she neither did her hair nor made her bed. She was clean in her habits.

*Note.*—The simple explanatory delusion exhibited by this patient is worthy of attention.

*Habit Tricks; Attitudes; Forced Movements; Moderate Premature Dementia; certified nine years, and previously at the age of 20.*

CASE 636.—J. S—, female, single, æt. 40, housekeeper; certified since the age of 31, and previously at the age of 20. Paternal grandfather insane. Eldest brother, and also paternal uncle, committed suicide. Notes taken two days after admission.

Hair very thin (from a habit of pulling it out) Teeth very irregular. Palate high, narrow, especially in front, and shelves forwards. Lobules of ears deficient. No cracks on abdomen. Breasts very atrophous. Marked corns on right knee (from a habit of kneeling).

A dull, childish-looking woman, who sits quietly and pays little attention to questions. She sniffs almost continuously, and plays with and picks her fingers. What is your name? "Sally, Polly, Tommy, Jip," and laughs. She then, when the question is repeated, replies "Jane" (incorrect). "That's cherry tree they put in, your name, and turpentine and beeswax" (possibly objects she has recently noticed, as the gardens are being planted and the floors are being polished).

She then mutters away to herself about "Polly Paine," "Lucy Mercer," etc. (names unknown). She cannot dress herself. She stays wherever she is placed. When she walks she keeps stopping and kneeling down on the right knee.

Some three or four months later her condition was substantially unchanged, being as follows: She picks away at her finger nails and takes no notice of me. If I try to attract her attention she says, "Don't do that," and goes on picking away as if absorbed in her occupation. At times she looks up and smiles in a shy manner.

She is very quiet but mutters to herself at times. She kneels down before she does anything—*e.g.*, on getting up in the mornings she kneels down and then stands naked for about half an hour. She does nothing for herself except as regards partial dressing, not even attempting to wash herself or do her hair. She is at times wet and dirty in her habits. If put in a certain place she, as a rule, stays there till she is moved, but at rare intervals she darts suddenly to the opposite side of the room. She often performs such actions as carrying out rolling movements with her fingers, or lying flat on her back on the floor for a minute and then getting up and kneeling on her right knee. She is stubborn over her food, which has to be more or less forced into her mouth.

#### CLASS (D).

##### *Sub-class (3). Premature Dementia—approximately "Paranoid."*

This sub-class contains seven cases, of which two are males and five are females. In spite of the small number of included cases, the writer is of the opinion, for reasons which are given below, that a "paranoid" sub-class of premature dementia is desirable for descriptive purposes, as he is convinced that the delusional cases now under consideration should not be included under either the "hebephrenic" sub-class, or under the class of "paranoia or insanity with systematised delusions," which is described under "Amentia" in Part II (*Journ. Ment. Sci.*, January, 1906, pp. 14—28).

With reference to the former the differences are obvious, and as he is here dealing, not with the precursory symptomatology of, but with developed examples of, premature dementia, a few words on this point will suffice. Cases belonging to the present sub-class exhibit relatively little confusion, and resemble ordinary examples of delusional insanity in the existence at their onset of a distinct and, at any rate, semi-systematised, persecutory stage in which hallucinations occupy a prominent place, and in their relatively slow progress; whereas, in the "hebephrenic" type of premature dementia, mental confusion,

with hallucination as one of its symptoms, is the prominent feature, and more or less rapidly ends in a mild or moderate grade of dementia. In the case of hebephrenia also, if persecutory ideas arise in consequence of persistent hallucinations, they are multiple and unsystematised, and the patient, at the most, develops an explanatory delusion.

With regard to paranoia, on the other hand, the differences are less obvious, and the psychiatric description of these is somewhat difficult to give with clearness. The ordinary statement that paranoid cases are primarily dementias with a less systematised set of delusions is inadequate, as it is possible to reply that the earlier age of onset, and the consequent existence of a less stable and experienced cerebrum, result in the development of an abbreviated and less systematised set of delusions and in a more rapid course to dementia, and that, therefore, such cases are really examples of true premature paranoia.

The latter was at one time the opinion of the writer, but further experience convinced him that it was necessary to limit the term "paranoia" to a special type of case with systematised delusions, which possesses its sane prototype, as does amongst others another and simpler, but correlated, type of high-grade amentia, the insane "crank" (*Journ. Ment. Sci.*, January, 1906, pp. 14—28). Such cases exhibit anomalous psychic processes which are presumably of developmental origin, and mild dementia ensues only with the onset of cerebral involution. The remainder of the cases commonly classed under "paranoia" exhibit complex phenomena of association which arise under the influence of local disorders of lower association. These phenomena are probably indicative of neuronc dissolution in the particular centres of lower association which serve as their physical basis, and such cases frequently develop considerable dementia. Two such examples are described and discussed in an earlier section of this paper (*Journ. Ment. Sci.*, July, 1906, pp. 481—486). In paranoia, in the view of the writer, the centre of higher association is the primary region at fault, in that it is unable to exercise its normal functions of co-ordination of, and of corrective and selective control over, the centres of lower association. In the delusional cases, which he excludes from the group of true paranoia, various local disabilities exist in one or more of the centres of lower association, and these lead either to unharmonious action

of these centres in relation to one another, or to more generally aberrant psychic processes, involving also the centre of higher association. The former condition is developmental, and the latter is evidence of local cerebral dissolution which slowly becomes widespread; and for the moment, for the sake of clearness, they may be spoken of as *developmental* and *dissolutive paranoia* respectively.

The cases contained in the present sub-class are of a similar type to the latter, and may be termed, for the moment, examples of *premature dissolutive paranoia*. Such cases occur at all ages and might conveniently be classed as examples of "paranoid dementia." The writer, however, prefers, owing to the fact that all grades of delusion exist in cases of dementia, from the unsystematised to the semi-systematised, or even the systematised, not to make use of any such general symptomatological division, although during the description of premature dementia he has found a sub-class of the kind convenient. His excuse for making an exception in the present instance lies in the fact that, of all the classes of primarily neuronc dementia, the amount of dementia is the greatest in the premature variety, in which, therefore, such a symptomatological division is both possible and convenient for descriptive purposes, although, from the general psychiatric aspect, it is undesirable. In other words—to render his position quite clear—whilst in premature dementia the few "paranoid" cases stand out sharply from the (usually more demented) "hebephrenic" and "catatonic" types, in the other varieties of primarily neuronc dementia no such "paranoid" group is evident unless *all* cases exhibiting unsystematised, semi-systematised, or even systematised delusions were included in this, to the exclusion of every other symptomatological characteristic. Under such circumstances, as so many further possible sources of delusion exist, owing to the more extensive mental content of the adult individual, a *reductio ad absurdum* would necessarily result.

The writer therefore limits the term "paranoia" to cases possessing anomalies of the higher psychic processes which are of developmental origin, and includes dissolutive delusional cases, with the above restriction of convenience, under the more general divisions of primarily neuronc dementia.

That this reservation is one of convenience only is clearly shown by the following case, which exhibits a symptomatology



comprising motor phenomena—*e.g.*, the striking of attitudes, semi-voluntary cataleptoid states, verbigeration, and characteristic handwriting; stereotyped “paranoid” phenomena—*e.g.*, hallucinations and delusions of persecution and grandeur; and with these a moderate grade of dementia. The interest attached to this case is still further increased by the fact that a brother of the patient, now dead, had exhibited a similar complex symptomatology.

J. J. M— (Rainhill Asylum), male, married, *æt.* 41, iron-moulder, certified since the age of 32. Brother died in this asylum (see notes below); father and also other brothers intemperate.

Six months before admission patient suffered from influenza, and three weeks before admission he developed mental symptoms, which chiefly consisted of hallucinations of hearing.

On admission he was quiet, coherent, and rational, and his memory was fairly good. He was able to give a good account of himself. He stated that his wife had committed adultery, and that people could easily read his thoughts by means of some machine.

For some months he continued quiet and unobtrusive, and was somewhat depressed. He was much occupied with his hallucinations, but worked fairly well. He then became grandiose, stating that he owned millions of pounds, and that the Prince of Wales and others were trying to kill him by means of machines in order to obtain this money.

A few months later he became restless, excited, dangerous, and threatening, and was noisy and talkative, and much troubled by hallucinations of hearing and delusions concerning electricity.

Four years after admission he was still in a similar condition, and he suffered severely from hallucinations of hearing, the voices appearing to come from the ceiling and from under the floor. He stated that he was in the asylum as “J. J. M—,” but that this man was tortured and killed two years ago, and that he had assumed his form and name. He therefore gave his age as two years.

He then for some time showed little mental change, but gradually came to speak of the voices as “crack-pots.”

He continued in this condition for some three or four years, and then gradually developed characteristic motor phenomena and a fixed delusion of grandeur.

He has now been in the asylum nearly ten years, and his present mental condition, in brief, is as follows :

He is a dull, listless man with a broad nose and a high and shelving palate. He is clean in his habits and a ward worker. He is at times noisy, and he is occasionally annoyed by what he calls the "crack-pots." He often stands motionless for long periods with his eyes closed, his mouth open, and his hands outstretched. He exhibits semi-voluntary cataleptoid phenomena. If, *e.g.*, one of his arms is raised, it remains where placed ; if, then, the second arm is also raised, both arms remain for a long time rigid and motionless ; if during this period the patient is suddenly told to open his mouth, he does so, and his arms at once fall down to the sides.

He replies readily to questions. He rejects his proper name, and states that his name is " King George," and when asked to write his name he slowly and laboriously indites " king George," carefully finishing off the letters and then returning to dot the " i " after he has finished. The style of hand-writing is in every way characteristic of that frequently referred to as occurring in premature dementia. When asked which " King George " he professes to be, he replies, "*Not* King George *III* ; my name is King George only to you, sir." Age ? " Unknown Zetland years of age I been dead " (*cf.* a delusion referred to already). " I came with a man named M—" (his own name). " I'm turned five years in this building, sir. Altogether here going for ten years. He came from W— on 7th or 8th October, ten years ago " (correct duration within two months). He knows the day and the exact date within a day, *i.e.*, " 26th or 27th February, 1907, 1907 year to you, sir " (really 25th). When again asked his age he replies, " Unknown Zetland, Unknown Zetland, Unknown Zetland, if you know what ' Z ' means. Unknown Zetland. I have to go by ' Z ' to you sir. I have no father and no mother to you, sir." It will be noted that he ends many of his phrases with " to you, sir," and also verbi-gerates.

The brother of this patient exhibited a very similar symptomatology, which is, briefly, as follows :

He was nine years older than his brother, and was admitted at the age of twenty-nine years. He was married, and was a file-cutter. When admitted to Rainhill Asylum he was excited, and suffered from hallucinations of hearing concerning women

and spirits, and from hypochondriacal delusions concerning his heart and stomach. He then became noisy, abusive, threatening, and violent, and suffered from marked auditory hallucinations and visceral delusions.

Two years later he often conversed with himself in an excited manner and suffered from hallucinations, he had numerous delusions regarding his present position, and he considered himself a supernatural being.

Shortly afterwards he began to develop cataleptoid phenomena, often remaining on his knees for hours in a partially dressed condition.

Five years after admission he stated that he had been in the asylum 20,000 years, that he was sixteen years of age, and that "spinks" were around him (*cf.* the "crack-pots" of his brother).

Seven years after admission he became dull and slovenly, and ceased to speak, work, or amuse himself. He also became dirty in his habits. Concurrently with this change in his mental condition, and probably as the cause of it, he developed tuberculous pleurisy, and he died of phthisis six months afterwards.

The remarkable resemblance between these two cases is too obvious to need further reference. The writer, however, as he made no personal observations on the latter, purposes to confine his attention to the former in the following remarks.

Such a case, though certified at the age of thirty-two years, would fall equally under the "catatonic" and "paranoid" sub-classes of premature dementia, in that it exhibits on the one hand, developmental and dissolutive motor phenomena, and on the other, complex dissolutive psychic products of paranoid type. The former of these have a physical psycho-motor basis, which justifies a symptomatological "catatonic" sub-class; the latter, except perhaps as regards the hallucinatory phenomena of lower association, have no such relatively simple physical basis, and therefore the formation of a "paranoid" sub-class, except as regards convenience, possesses no present pathological justification. Such a paranoid symptom-complex, in fact, occurring in a case which exhibits the typical characteristics of the "catatonic" sub-class of premature dementia, is, in the opinion of the writer, ample evidence that the "paranoid" state, in contra-distinction to "developmental paranoia," is simply indicative of a cerebral dissolution which involves both

the individual neurones of the higher centre of association, and of several centres of lower association, and also, as a consequence, in a most intricate manner, the various intra-centric neuronic complexes.

He therefore holds that the "paranoid" state is a variable symptom-complex indicative of widespread, though not necessarily advanced, cortical dissolution, and that it is consequently undesirable to employ the term generally, either for gross symptomatological purposes, or to denote a psychiatric subdivision possessing a histo-pathological basis.

The small number of cases in the sub-class at present under consideration renders it impossible to draw conclusions of value with regard to degeneracy and dementia respectively. It may, however, be stated that three of the seven cases are high-grade ailments, which is about the average occurring in the total class of premature dementia; and that two of the seven cases exhibit a moderate grade of dementia, which is much below the average occurring in the whole class.

Of the seven cases, four were workers (two good and two ordinary), one refused to work, and two were incapable of useful work.

The following five cases are appended for the purposes of illustration.

*High-grade Amentia; Grandeur; Suspicion; Systematised Persecutory Delusions; Hallucinations of Hearing; Mild Premature Dementia; certified eleven years.*

CASE 637.—A. A. S—, male, single, æt. 31, painter. Certified since the age of 20. Father insane. Notes taken on the day after admission.

Palate very high, very narrow, and shelves markedly forwards. Incisor teeth very prominent. Mouth open. Chronic disseminated tuberculosis of both lungs.

A thin, bright-eyed young man with a bad cough, who speaks with a slight lisp. He gives his name, and the year in which he was born, (presumably correct). He knows where he is, and says that he has never been in this neighbourhood before. He gives the correct day and date. He states the exact date on which he was first taken to an asylum, and states that he was there "just under 21 years." He presumably here refers approximately to his age when admitted. He gives the exact date on which he was transferred to the asylum from which he was admitted here. He was an "artist decorator" and served the whole of his apprenticeship, afterwards "jobbing about." "I pleased myself and suited the exuberance of my own verbosity in going to C—," (his first asylum)—this remark being given in reply to a



question as to the cause of his detention. He replies that he hears voices, but "I was all right, I was all right. I was keeping my eye open." He thinks it was a male voice, and he very seldom hears women's voices. He then states that "Electricity is life. As Dr. —, passed through the ward, he said 'Is that the line?' and I said 'not yet' and then he came parallel, and we seemed to go by train, didn't we? . . . But it's such a lot, its no use talking, except giving an idea of what we are talking about." He thinks the voices "are all to my good," also "my brain is touched and played on by electricity." Who does it? "That's a matter of the combination, one thing or another. Doctors must get well and so a patient must get worse" . . . "I was much afflicted the first two months at C—. I had the battery put on."

Whilst under observation patient improved in health and became a moderately useful worker. Further conversations resembled that given above, and merely confirmed the conclusion, which had already been acquired, that the patient had previously elaborated a systematised group of delusions of a persecutory nature, but that his abbreviated modes of thought and expression, consequent on the development of stereotypism and mild dementia, rendered it impossible to obtain a complete account of their exact nature and mode of development. He was suspicious, conceited, and grandiose, and had a habit of showing very obviously that it was not worth while troubling, and might even be risky, to give detailed descriptions of his experiences, which could not be comprehended and might readily be misunderstood by his interlocutor.

*High-grade Amentia ; Delusion of Grandeur ; Moderate Premature Dementia ; certified seven years.*

CASE 638.—G. P. T—, male, single, æt. 29, of no occupation. Certified since the age of 22. Notes taken two days after admission.

A fatuous-looking young man with a small upper lip. He gives his correct surname, and when asked his Christian name he remarks, "Whatever you like to call me." He does not know where he is or what is his age, but, hearing a piano, he remarks, "It's a good-toned piano, that is." Can you play? "Oh, yes." He states that he was born in P— workhouse and used to scrub floors there. He tells me that his father and mother were Mr. and Mrs. M—. He is extremely dull, silly, and fatuous, and the information he supplies is quite untrustworthy. For example, he previously did not know his age, but when asked later he replies "22." He says that he went to school, so I ask him to write his name, which he has previously stated correctly. He takes the pencil in his hand readily, but slowly, and, after licking it, he painfully and tediously writes as follows :—

God

He informs me that this is really his name, that it is a "Christian name," and that he has to keep writing it so as not to forget it.

Whilst under observation he remained dull, fatuous, and listless, and could not be persuaded to do any work, though he would attend to his own wants. When requested, he would write his name as above.

*Note.*—The case is an unusual one, and owing to the amount of dementia present it was not possible to determine the method by which the patient had arrived at his fixed idea, which, curiously enough, he could only be got to express in writing. The writing is similar to that already several times mentioned as characteristic of premature dementia. The general behaviour of the patient, as already stated, was that of a moderate dement, and not that of an imbecile, though the patient was obviously a degenerate. The case, after consideration, has therefore been placed in its present position, as an example of the delusional type of premature dementia in a patient of originally defective intelligence. The writer has been influenced to adopt this view owing to having seen more than one case of similar type, and, notably, a patient of originally defective intelligence who thought that he was heir to the throne and son of the late Queen. This patient was firmly convinced of the truth of his delusion, although he could give the names of his father and mother, and was able to inform me that they had both been dead some years. (The late Queen was then alive.) When confronted with this discrepancy he was not in the least disconcerted, but talked fluently and inconsequently about his "family likeness to the Georges," etc.

*Delusions of Grandeur ; Mild Premature Dementia ; certified five years.*

CASE 639.—A. E. R—, female, married, æt. 30, charwoman. Certified since the age of 25, and showed symptoms since the age of 24. Notes taken on the day after admission.

The teeth are very irregular. The palate is very high, narrows remarkably anteriorly, and then rapidly shelves forwards. The ears have no lobules. The finger nails are bitten into the quicks. There are no skin cracks on the abdomen, and the breasts are nulliparous.

A lively-looking woman with a very smooth forehead and bright eyes. She informs me that her name is Mrs. L—, and that she became Mrs. L— whilst at G— (the asylum from which she has been transferred). Mr. L— is a lawyer at H— (her native town), and she used to know him when she was a girl at school. She thinks that he died six months ago. She was married by telephone in his hospital at H— two and a half years ago. Mr. R— (her present husband) died 10 or 12 years ago, and two days after his death she was married to the Czar of Russia because she was an adulteress. She was then the Czarina of St. Petersburg. When asked about the asylums in which she has

resided she informs me that she lived "3½ years next November at G—, might be longer." She went there from C—, in which she had lived three and a half years. (She has only been certified five years.) When leaving home "I was to go to Windsor Castle to go to the palace at Constantinople and if not there to St. Petersburg or Germany but they sent me to C— instead." She knows the present day and the day on which she came here, but she guesses the month as "June or July" (August), and she does not know the present year. She then becomes garrulous, and amongst her remarks a question as to whether she has had any children elicits the following: "I have three living children as I know of but they are in Zululand doing well. Two little boys with golden hair and one little girl. I had a boy and a girl before but they had fits. One was a sailor and one was a soldier," etc. No clear persecutory stage prior to her present condition of grandeur could be elicited.

Whilst under observation the patient remained mentally unchanged, and she was a willing and useful worker.

*Delusions of Persecution; Hallucinations of Hearing; Premature Dementia; certified seven years.*

CASE 641.—M. E. G—, female, single, æt. 31, servant. Certified since the age of 24. Notes taken three days after admission.

A somewhat depressed woman, who says she is rather unsettled owing to coming here, but has nothing to complain about. She gives her name and her age correctly. She says that to-day is Wednesday (Thursday), and that she has been here a few days and came on Monday (correct). She knows the month but not the date. She complains that she received no wages except an occasional penny, and money from her friends, whilst at C— (the asylum from which she has been transferred). She states that she was there for seven years. She acknowledges that she suffers from auditory hallucinations, but "I refuse to attend to them." They are "in my head, but I will not attend or they would run away with me. It is very hard to have this trouble but I try to bear it." "They repeat my thoughts and seem to know them. They connect with me in some way and are not to be seen only heard. They would paralyse me if I would allow them the power. There are two or three of them, and it sounds like a man or woman. *If I think of a thing I hear the words back.*" As an example, she tells me that *if she thinks of my name she hears it repeated by them in her head.* She left her home at H—, as she was ill owing to this persecution. "I suppose it is someone I have done harm to, but it is anyway a very unnatural sound. I have been well brought up and I feel that it is hard on me." She finally, when asked about work, informs me that she can wash up, cook meals, or do anything, and she says that she is willing to do so.

Six months later her general condition was substantially unchanged, being as follows: She is dull and phlegmatic, and smiles in a fatuous manner when addressed. She knows the day, the date, and the date on which she came here. Voices? "I hear them but I don't listen to

them." When? "Any time." "I answer myself . . . thoughts." She is more secretive regarding her experiences than she was six months ago. She works in the ward kitchen, and works well at times, but as a rule she is very slow. She would like to attend to the kitchen by herself, but she is too slow. She is also slow over eating her food. It is always necessary to look after her in order to see that her work is properly performed. She talks to herself, and if she thinks she is alone she speaks quite loudly. She, as a rule, ceases when she is observed. She is very fond of hoarding rubbish. She reads newspapers and books and writes letters. She talks fairly sensibly on ordinary subjects, and would be a useful worker if she had more initiative.

*Note.*—This patient resembles in every essential respect certain cases which exhibit complex psychic products, due, probably, to local disorders of the regions concerned with lower association, and allied to, and usually considered one of the types of, paranoia. Two of these cases are described and discussed by the writer in an earlier section of this paper (*Journ. Ment. Sci.*, July, 1906, pp. 481-486). The present case commenced at an earlier age, namely, twenty-four, whereas the others had well passed the third and fourth decades respectively. The patient has developed considerable dementia, and this disability, her sex, and her lesser intelligence and education, are probably conjointly responsible for the absence in her case of a grandiose stage, for this stage in such slowly-developing cases occurs late, and is arrived at by a process of more or less elaborate reasoning. The present case thus rightly falls, in the view of the writer, into the "delusional" or "paranoid" sub-class of premature dementia.

*High-grade Amentia; Delusions of Grandeur; Hallucinations of Hearing; Moderate Premature Dementia; certified eighteen years.*

CASE 643.—M. A. S—, female, single, æt. 41, domestic servant. Certified since the age of 23. Notes taken two days after admission.

An excited woman, with numerous stigmata of degeneracy, who talks extremely rapidly and almost without cessation. She was sleepless all last night, and refused her breakfast this morning. She at once informs me, when I ask her her name, "I thought I was a boy some years ago and if I had anything to do with a girl I don't know what they would say." She tells me that her age was "31 on 30th September." She knows when she came and the day and the date, and states, "I have come from a house where there is a girl named C—P—" (correct). She then rapidly and almost unintelligibly gabbles on about Queen Victoria, the Government, the Prince of Wales, etc. She speaks so rapidly, and it is so difficult to retain her attention, that it is nearly impossible to obtain any further information



from her. She left home in 1876 (incorrect). She hears voices, but "not much. They talk about throwing chamber-pots." She then talks of Holy Communion, etc., and speaks so rapidly and so indistinctly that a satisfactory specimen of her conversation cannot be obtained, although each phrase seems to follow the previous one in a coherent, if inconsequent, sequence.

Six months later her condition showed no substantial change, and was as follows: She talks continuously, and appears to be telling her history, but, though the individual phrases are correct, the whole is a most unintelligible conglomeration, which, however, *sounds* sensible. At times she gives quite sensible replies to questions, and then runs on again. She knows the day, but not the month, apparently from non-attention. She breaks away too frequently to allow of any satisfactory history being obtained from her. She says that her illness began at the age of 16, and that she is an actress and is to marry the Prince of Wales. She often mutters to herself or shouts to voices, and at times apparently to the Prince of Wales. She is often threatening in manner, but she never strikes. She reads, but never writes letters. She sews and rubs and dusts and makes beds, etc., at times, but becomes noisy when asked to work, and says she is told not to do it as she is a person of importance and keeps servants here. She never works unless asked to do so, and then only under protest. She is clean in her habits, but is very fond of picking up food with her fingers.

*Note.*—In the description of this case, owing to her rapid speech, it was impossible to reproduce the evidence, which was constantly being exhibited, that she was not a mere degenerate, but had lived outside and had seen a good deal of life before her incarceration. She had obviously suffered a certain amount of mental deterioration, and the frequent glimpses of a grandiose condition which she exhibited, together with the absence of the dulness and apathy of the simple case of premature dementia, have led to her inclusion in the present sub-class.

(<sup>1</sup>) The writer is, of course, perfectly aware that "Frankenstein" was the maker of the monster and not the monster itself. As, however, Mrs. Shelley omitted to supply the latter with a name, he sees no reason why it should not be granted the modern privilege accorded to motor cars, etc., and therefore christens Frankenstein's creation after its maker. This explanation is inserted lest the writer's name should be added to the list of those who, for the greater part of a century, have been pilloried for the perpetration of the "Frankenstein blunder."

(*To be continued.*)

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*The Clinical Measurement of Fatigue.* PART I.—*The Measurement of Mental Fatigue.* By WILHELM SPECHT, of Tübingen University. (From Prof. Kraepelin's Psychological Laboratory in the Heidelberg Lunatic Asylum.) With twenty-four figures in the text. Authorised Translation from the German, revised by THOMAS JOHNSTONE M.D.Edin., M.R.C.P.Lond.

(Continued from p. 570, Vol. LII.)

*The Measurement of Fatigue in Traumatic Neuroses.*

WE have already pointed to the great practical importance of the measurement of fatigue in traumatic neuroses. It is particularly important for our purpose because, as we have already observed, exaggerated fatigue is always present in this disease, and so it gives the best opportunity of testing the general applicability of our method to the clinical measurement of fatigue.

Many years ago Gross <sup>(1)</sup> and Röder <sup>(2)</sup> measured fatigue in traumatic neuroses by the method of continuous addition. They made use of periods of work lasting half an hour, half an hour's addition without any pause being done daily for several consecutive days. Gross calculated the amount of fatigue from the diminution of the work done in the second quarter of an hour, stated as a percentage of the work of the first quarter of an hour, and also from a comparison of the first quarter of an hour of the second day with the second quarter of an hour of the first day. By comparing the work values of his patients with the corresponding work values of a large number of healthy subjects, Gross discovered that his patients' liability to fatigue considerably exceeded the "limits of health," and also that the absolute amount of work performed by them was far below the normal values. These results were afterwards confirmed by Röder, who applied the same method to a larger number of patients.

Gross himself was conscious of the error inherent in his method of calculating the amount of fatigue. Yet it cannot be denied that the method has a certain utility, especially if the amount of work done in each separate section of five minutes is recorded. In cases where the liability to fatigue is

extraordinarily great, it will make itself known in a continuous decrease in the work performed. We recognised the significance of such a course of work when discussing the experiments made by Oehrn and Weygandt. On the other hand, we are fully persuaded that experiments with a pause form the only means by which anything like a satisfactory measurement of fatigue is possible.

The patients we employed in our experiments were kept under observation for a considerable time, partly in the Insane Hospital and partly in the Medical Hospital of Heidelberg, and were found to be suffering from traumatic neuroses, free from all complications. The following brief accounts are taken partly from the hospital notes made on these patients and partly from my own observation:

P—, (3) æt. 64, belt-maker and clerk to the Guardians of the Poor. Formerly perfectly healthy. In 1897 was in a railway collision. Slight external injuries. Great fright, much excited, fainted. Has been changed ever since. Very forgetful, depression, monotonous train of thought, hasty temper, very loquacious. Reduced capacity for work at his business. Highly exaggerated liability to fatigue. Examined by Gross in 1898; the same disturbances. Practically unchanged in 1903.

B—, æt. 56, grinder. Luetic infection in 1867; always healthy in other respects. Accident, 1891, open wound on forehead. Not unconscious. Wound healed well. Subsequently neuralgic pains radiating from the scar, especially on physical exertion. Almost entire incapacity for work in consequence of this. Change of character since that time. Irritable to the point of fits of wild rage, sullen, mentally indolent, weak of will. Increased liability to fatigue. Numerous hysterical symptoms. Practically no improvement in capacity for work so far.

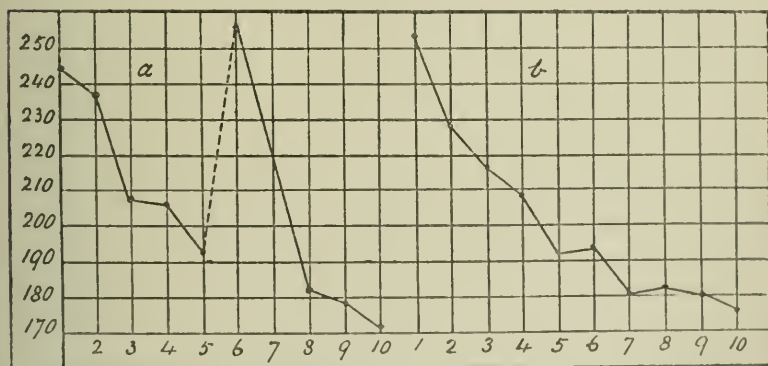
Pf—, æt. 42, whitewasher. Formerly healthy. Fell on his head in 1900, unconscious for a short time. Open wound, soundly healed. Able to work in a few days. Changed ever since. Felt tired, was irritable, and apathetic, grew worse a year later. Giddy feeling, hysterical attacks. Left off working, was very quiet, lived "as if in a dream." Difficulty in comprehension, timidity, increased liability to fatigue, great reduction of mental and physical capacity for work. Practically no improvement since.

J—, æt. 48, carter. Insane heredity, formerly healthy. Struck by lightning and thrown to the ground in 1902, not unconscious; paralysed on right side. Quick recovery from paralysis; very timorous since then; afraid of thunderstorms. Quiet, shy disposition, feeling of incapacity, hypochondriacal direction of thoughts. Capacity for work at occupation reduced, increased liability to fatigue.

T—, mason, æt. 49. Lungs at one time transitorily affected healthy in other respects. A series of accidents since 1886 some resulting in considerable external injuries; never unconscious; capacity for work only temporarily impaired; last accident in 1901; broke some bones in the face; not unconscious. Numerous nervous troubles since then; depressed and tearful mood, irritable, timorous, taking no interest in those around him, quite devoid of will-power; capacity for work completely lost; increased liability to fatigue; hysterical symptoms.

M—, vintager, æt. 48. Formerly healthy. Ill health since 1899. Fall in a cellar on his left side in 1900. No external injuries; severe dyspnœa, attacks of pain since then in the region of the heart, with giddiness, breathlessness, and a "feeling of annihilation." Depressed, irritable, tearful. Hypochondriacal loss of will-power; incapacity for any mental or physical occupation; increased liability to fatigue. Hysterical tachypnœa up to 52 respirations a minute. Numerous other hysterical stigmata.

FIG. 18.





*Work-curves of Patients.*

SUBJECT P.—In its general course, curve *a* much resembles that of Subject 17, who was so very liable to fatigue. The rate of work decreases continuously from the first minute to the pause. But while in Subject 17 there were obvious signs of impulse in the first and fifth minutes, it is hardly possible to discover in P— any influence of an exertion of the will in the amount of work done. Only from the third to the fourth minute does the curve show a less abrupt fall. Even here the subject is unable to increase his performance of work by the exertion of his will. After the pause the rate of work is higher at first than at any previous time. As the course of the curve seems to show that the work of the sixth minute was not affected by impulse, we may assume that the fatigue so far disappeared during the pause, that the persistent effect of practice prevailed at first over the effect of the fatigue remaining. From the comparatively high starting-point after the pause the curve falls very abruptly, and by the eighth minute the rate of work is lower than at any time before the pause. Thus the pause has at first had a purely favourable influence on the course of the work through its restorative effect, but the restorative effect itself has been extremely fugitive.

Curve *b* falls abruptly from the first to the fifth minute without changing its general course. It rises a little in the sixth minute, then falls again and follows a more horizontal course until the tenth minute. Curve *a* also shows a change of direction, which takes place at the eighth minute. It is probable that the work done in these last sections of the course was partly influenced by impulse, but we cannot attribute the more horizontal course of both curves in the last few minutes, especially the course of curve *b* from the sixth minute onwards, exclusively to this cause. We knew that the exertion of the will can only be kept up for quite a short time, and that it seldom lasts for more than a minute, but the more horizontal course of curve *b* continues for several minutes. We must rather explain the course of this curve, which changes its direction from the fifth minute onwards, by supposing that the fatigue of the subject increased very quickly at the beginning of the work, but reached a point in the fifth minute beyond which it increased only slowly.

Co-efficient of practice =  $235 - 257 = + 11.1$  per cent.

Additions in I 5' - Additions in II 5' (with pause)  
 $= 1083 - 1007 = - 7.1$  per cent.

Additions in I 5' - Additions in II 5' (no pause)  
 $= 1110 - 913 = - 17.9$  per cent.

Difference =  $10.8$  per cent.

5' - 6' (with pause) =  $192 - 257 = + 33.8$  per cent.

5' - 6' (no pause) =  $191 - 192 = + 0.5$  per cent.

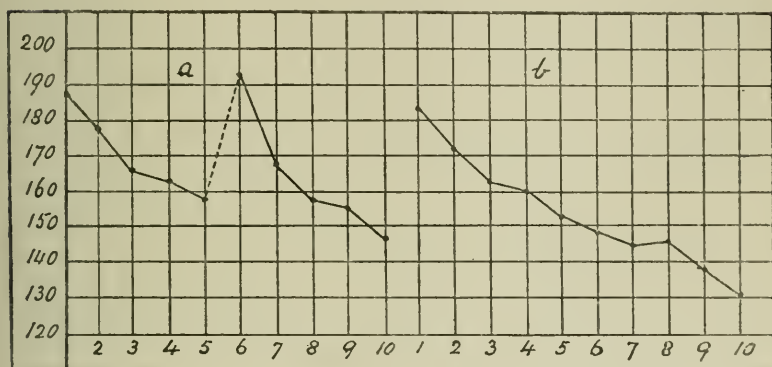
Difference =  $+ 33.3$  per cent.

Co-efficient of fatigue =  $- 25.8$  per cent.

Total additions = 2193.

2' - 10' =  $- 24.1$  per cent.

FIG. 19.



SUBJECT B.—Both curves resemble those of Subject P—in their general course, but the difference in the absolute performance of work must be noticed. Curve *a* sinks continuously from the first minute until the pause, and there are no signs of impulse. In the first minute after the pause the rate of work is higher than at any previous time. Here, too, the persistent effect of practice prevails over the effect of the fatigue remaining. But by the second minute after the pause the values have fallen again considerably. The influence of impulse in the sixth minute is excluded, if we consider the fact that in the whole course of both curves, with the exception of the very slight rise in the eighth minute of curve *b*, there are no signs of an effort of the will to be found. As in Subject P—, the amount of work done after the pause is far less than that of

the work done before it, as the result of great fatigue. Here, too, the pause has at first had a good effect on the work, through its restorative action, but the subject has not recovered from his fatigue sufficiently for the persistent effect of practice, even though reinforced by fresh practice acquired during the second half of the experiment, to prevail over the effect of fatigue. With the exception of the trifling rise in the eighth minute, curve *b* never alters its direction, a fact pointing to great susceptibility to fatigue in the subject. It is remarkable that this curve starts from a rather lower point than curve *a*. As the experiments in which the work is done without a pause come a day later than the experiments with a pause, we should have expected them to have a higher starting-point, as the result of the advance of practice, as is the case with all the other subjects. We must suppose that this subject had little capacity for retaining practice.

Co-efficient of practice =  $179 - 193 = + 7.8$  per cent.

Additions in I 5 ~ Additions in II 5' (with pause)

$$= 852 - 821 = - 3.7 \text{ per cent.}$$

Additions in I 5' ~ Additions in II 5' (no pause)

$$= 831 - 709 = - 14.7 \text{ per cent.}$$

$$\text{Difference} = 11.0 \text{ per cent.}$$

$$5' - 6' \text{ (with pause)} = 158 - 193 = + 22.1 \text{ per cent.}$$

$$5' - 6' \text{ (no pause)} = 153 - 148 = - 3.3 \text{ per cent.}$$

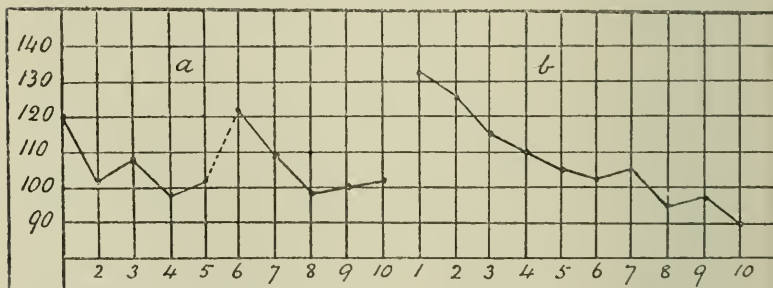
$$\text{Difference} = 25.4 \text{ per cent.}$$

Co-efficient of fatigue =  $- 20.8$  per cent.

Total additions = 1683.

$$2' - 10' = - 24 \text{ per cent.}$$

FIG. 20.



SUBJECT Pf.—The absolute performance of work is extraordinarily small. Curve *a* shows fluctuations which must be

interpreted as signs of impulse. The subject said himself: "I tried again and again to add together more figures." It is hard to tell how far the difference between the performances of the first and second minutes was affected by a greater exertion of the will in the first minute. In curve *b* there are no signs of impulse in the first minute. It is possible that the subject set to work in a different way, according to whether the experiment was to be made with or without a pause, and that the prospect of a speedy ending led him to a greater exertion of his strength. The work was certainly influenced by impulse in the last minute before the pause. On the other hand, the uniform downward direction of curve *a* from the sixth to the eighth minute does not favour the supposition that the subject worked with a special effort of the will after the pause.

Co-efficient of practice =  $103 - 121 = + 17.4$  per cent.

Additions in I 5' - Additions in II 5' (with pause)

$$= 528 - 529 = + 0.1 \text{ per cent.}$$

Additions in I 5' - Addition in II 5' (no pause)

$$= 584 - 491 = - 16.0 \text{ per cent.}$$

$$\text{Difference} = 16.1 \text{ per cent.}$$

$$5' - 6' \text{ (with pause)} = 102 - 121 = + 18.6 \text{ per cent. (too small)}$$

$$5' - 6' \text{ (no pause)} = 116 - 113 = - 2.9 \text{ per cent.}$$

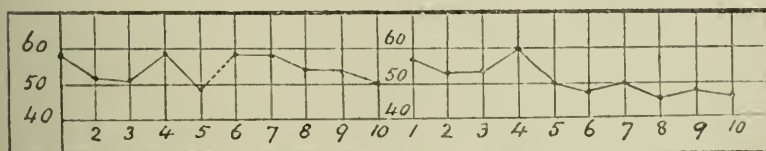
$$\text{Difference} = 21.5 \text{ per cent.}$$

Co-efficient of fatigue =  $- 28.1$  per cent.

Total additions = 1112.

$$2' - 10' = 124 - 90 = - 27.5 \text{ per cent.}$$

FIG. 21.



SUBJECT J.—We have only an eight-day series with Subject J—. As the increase of practice gradually diminishes in the course of the experiments, and is, therefore, greater on the first than on any subsequent day, we must remember, in dealing with the average values, that they may be more influenced by the effect of practice than those obtained from a twelve-day series of experiments.



If we calculate the reduction of work done in the second five minutes of the individual days without a pause as a percentage of the work done in the first five minutes, we arrive at the amount 6.8 *per cent.* less on the second day, 13.5 *per cent.* less on the fourth day, 12.7 *per cent.* on the sixth day, and 19.1 *per cent.* on the eighth day. From this we see that the diminution of work in the second part of the experiment has, on the whole, increased from day to day. This deterioration is to be explained by the circumstances that the fresh gain of practice diminishes with the increase of the amount already gained, and that the effect of fatigue is thus more able to make itself felt. If the experiments had been continued for twelve days, the effect of fatigue would presumably have been still more evident.

Both curves show a very horizontal course on the whole, the highest and lowest performances of work in the individual minutes differing only by fifteen additions. But we must bear in mind that the absolute performance is extraordinarily small, and that the smaller the number of figures added up in a minute the smaller will be the absolute amount of the fluctuations. It is only from this point of view that we can judge the fluctuations of the curve correctly. Curve *a* falls from the first to the second minute. We must not suppose the fall to be an expression of fatigue; it is more likely that the work-value of the first minute and also that of the fourth minute are affected by an effort of the will. There are no signs of impulse to be found in the fifth and sixth minutes either on the days with or without a pause.

The total performance of the first five minutes of all eight days amounts to 542 additions. It appears from the list of experiments that the performance of the first five minutes was about the same from the sixth to the eighth day. Seventy-one additions were made on the sixth day and seventy-four on the eighth day. The better to compare the absolute performance of this patient with that of the other subjects of experiment, it will be well to add to the performance of the first eight days the amount of work that would presumably have been done in the four days that are missing. Assuming that the subject would have made an average of seventy-four additions in the first five minutes of each day, the total performance for twelve days would have amounted to about 840 additions.

Co efficient of practice =  $53 - 59 = + 11.3$  *per cent.*

Additions in I 5' - Additions in II 5' (with pause)  
 $= 271 - 276 = -1.80 \text{ per cent.}$

Additions in I 5' - Additions in II 5' (no pause)  
 $= 271 - 235 = -13.3 \text{ per cent.}$

Difference  $= 15.1 \text{ per cent.}$

5' - 6' (with pause)  $= 49 - 59 = +20.4 \text{ per cent.}$

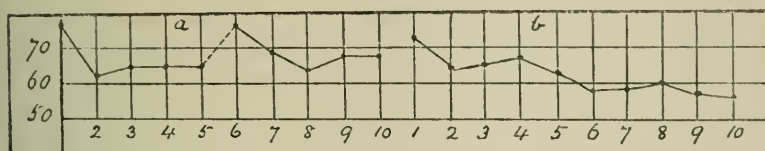
5' - 6' (no pause)  $= 50 - 47 = -6.0 \text{ per cent.}$

Difference  $= 26.4 \text{ per cent.}$

Co-efficient of fatigue  $= -21.9 \text{ per cent.}$

2' - 10'  $= 54 - 46 = -14.9 \text{ per cent.}$

FIG. 22.



SUBJECT T.—The absolute performance is even less than that of the patient J—, amounting to an average of only twelve additions in a minute. The curves take a horizontal direction. The fall from the first to the second minute in both curves, and again the fall immediately after the pause, make a strong contrast with this horizontal course. How are these falls to be explained? In the first place, they might depend on impulse at the beginning of the work. In that case the patient must have begun work with a great exertion of will, for the reduction of work in the second minute amounts to 19.3 *per cent.* of the work done in the first minute. Now, the patient's whole mental behaviour during the experiment was in contradiction to the idea that his work could be influenced by a strong effort of the will. He was very slow and clumsy in his movements, apathetic, languid, and devoid of all initiative. Again, if the patient had begun his work with a great exertion of his will, we should have expected that other obvious signs of impulse would be found, but there are none to be seen. The sinking of the curves might also be a result of fatigue. But if the fatigue had reached so high a degree in the second minute as to cause a deterioration in the work to the amount of 19.3 *per cent.*, the curve must at least have shown a further fall in its general course. This is not the case, for it is almost horizontal.

To explain the remarkable course of the curve, we may appeal to experiments made with this patient on the ergograph. With the object of measuring the fatigue caused by physical work, the patient was told to make a series of pulls of 5 kilograms at regular intervals of one and a half seconds. The first pull was quite successful, but the second pull raised the weight a considerably smaller distance than the first, and subsequent pulls had hardly any effect. The weight, which was raised about 3.5 cm. by the first pull, only rose about 1 cm. at the third. But instead of the patient's showing a still further loss of strength, all his subsequent pulls had about the same result as the third, and he made thirty more attempts without the occurrence of any material change in the height of the lift. All the encouragement to lift the weight higher given him by the conductor of the experiment was without effect. A fresh experiment was made after a pause of thirty minutes, beginning with a weight of 4 kgm., with almost exactly the same result. The weight was lifted the full height at the first pull, while at the second the height of the lift diminished to precisely the same extent as in the first experiment, and remained at about the same level afterwards. Eventually we reduced the weight to 1 kgm., but still with a repetition of the results of the first experiment.

There can be absolutely no doubt that the nature of the patient's work on the ergograph was not determined by physical fatigue. If the reduction in the lift from 3.5 cm. to 1 cm. during the first three pulls had been due to the effect of fatigue, that would have implied the exhaustion of the muscles, and the patient would not have been able to continue his work as he did. That the work always deteriorated in the same way, independently of the size of the weight, also shows that the deterioration was not due to fatigue. We must rather suppose that we have to deal with a severe disturbance of a mental nature which affected the patient's capacity for work. We might explain this disturbance, to a certain extent, by saying that, following the sense of exertion which belongs to the first stroke of work, a hampering sense of incapacity springs up and destroys, or very greatly impairs, the capacity for work. The feeling of incapacity may exist from the first, when the work will be feeble from the very beginning, or it may be increased by the sense of exertion, and then the performance of work

will decrease and adapt itself more or less exactly to the degree of capacity which the patient still feels that he possesses.

In the same way we may explain the patient's mental work-curves by a sense of impediment. The poor initial performance points to the presence of the impediment from the first. But the sense of impediment is increased by the exertion of adding up, and the work performed is reduced to the amount of which the patient still feels capable. As extraordinarily little work is done, there is no occasion for any great results of fatigue to make themselves felt; the pauses between the separate additions are so long that the patient always has time for recovery. On the other hand, even this small amount of work, if continued for a considerable time, may produce a degree of fatigue that will have some effect, especially in a person very liable to fatigue. The sense of fatigue may at first increase the feeling of impediment only to a certain degree, in which case the work-curve will fall at first and then follow a horizontal course for some time after, or if the fatigue increases continuously, it may produce a continuous increase in the feeling of impediment, and in that case the amount of work done will decrease continuously.

Curve *b* takes an almost horizontal direction from the second to the fourth minute, then falls until the sixth minute, and remains at about the same height from that point to the end. It is quite possible that the impediment is increased by the sense of fatigue and that the subject settles to the rate of work of which he still feels capable. From this point of view we might assume that the decrease in the rate of work for the second five minutes of the days without a pause is due to the effect of fatigue. But it is questionable if the difference between the two work-values immediately before and after the pause can be employed to estimate the amount of the fatigue. Curve *a* is almost horizontal from the second minute to the pause, and such a course gives no indication of fatigue. The rise in the curve after the pause might be explained by supposing that the feeling of impediment, so far as it had been increased by the work done in the first minute, disappeared during the pause, so that the patient went on again with the same rate of work as at the beginning. We found, in the case of his work on the ergograph, that the weight was raised considerably higher by the first pull after the pause than by the last pull



before the pause, although this difference in the height of the lift did not depend on the effect of fatigue.

As the patient's capacity for work was influenced permanently and in a high degree by the effect of the impediment, we should, of course, expect the other influences that usually act on the course of work to make but little impression on the work done by him, yet we cannot fail to recognise that he has made some advance in practice during the experiments. While he made 45 additions in the first minute on the first day, he made 56 on the twelfth day. The average daily advance in practice, however, only amounted to 0.8 additions.

As the decrease in the rate of work for the second five minutes on the days without a pause is apparently due to fatigue, we may use the difference between the work-values of the two sections of five minutes to help us in estimating the effect of the fatigue. But here, too, we must remember that the rate of work was influenced by the effect of the mental impediment, and that the fatigue was, therefore, felt only in a slight degree. But for the result of the impediment, the effect of the fatigue would probably have been very much greater. For the reasons already given, none of the other work-values are of any use for the measurement of fatigue.

Co-efficient of practice =  $63 - 78 = + 23.8$  *per cent.*

Additions in I 5' - additions in II 5' (with pause)

$= 337 - 337 = \pm 0$  *per cent.*

Additions in I 5' - additions in II 5' (no pause)

$= 329 - 286 = - 13.1$  *per cent.*

Difference =  $13.1$  *per cent.*

5' - 6' (with pause) =  $65 - 78 = + 20.0$  *per cent.*

5' - 6' (no pause) =  $62 - 57 = - 9.6$  *per cent.*

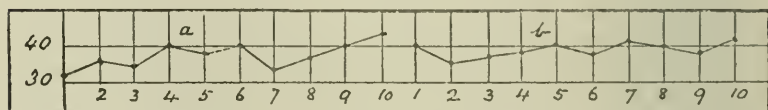
Difference =  $29.6$  *per cent.*

Co-efficient of fatigue =  $- 29.0$  *per cent.*

Total additions = 664.

2' - 10' =  $- 12.5$  *per cent.*

FIG. 23.



SUBJECT M.—A ten-day series of experiments. The work-

curves of this patient may be considered parallel to those of the patient T— in their general character. The features common to both are the extraordinarily small absolute performance of work and the horizontal, sinuous course of the curves. But while in the case of the patient T— the rate of work falls considerably from the first to the second minute and from the fifth to the sixth minute, and then remains on the same level in the experiments with a pause, but gradually sinks still further in the experiments without a pause, both the work-curves of the patient M— show that the performance of work improved continuously, in however slight a degree, during the experiment. The work-values of the sixth minute of the experiments with a pause and the first minute of the experiments without a pause are, however, rather higher than the corresponding values of the seventh and second minutes. Whether the fall has the cause that we assumed in the case of the patient T—, or is due to accidental influences, must remain uncertain. At any rate, the general direction of these two curves is upward. The amount of the absolute performance of work, which is even smaller than in the case of Patient T—, shows that the patient's capacity for work is reduced to a minimum. Here, too, we must assume an impediment of mental origin as the cause of the reduction. The impediment, which increases still further during the work in the patient T—, is greater here at the beginning of the work than in its subsequent course. It does not disappear, but its effect on the course of the work is weakened by the action of practice in facilitating the work and possibly by that of momentum. The patient made an average of about eight additions a minute. With this small performance of work, fatigue had no effect, or so slight an effect that it was more than covered by the opposite effect of practice. The effect of practice also appears in the improvement in the rate of work from day to day. Thirty-seven additions were made in the first five minutes on the first day and forty-three on the tenth day. The average daily increase of practice was equivalent to 0.6 additions, or 1.6 *per cent.* of the performances of the first day.

As both work-curves are free from signs of fatigue, we cannot determine the amount of its effects, even approximately, from the work-values of the patient. Neither can we form any idea of the patient's capacity for practice. The result of practice

can indeed be seen, but here, too, we must assume that it is hidden to a great extent by the effect of the impediment. In order to compare the amount of this patient's absolute performance directly with the performance of the other patients, it will be well to count up the additions which he would presumably have made on the eleventh and twelfth days. In the first five minutes of the eighth, ninth, and tenth days he made 43, 40, and 43 additions. If we assume that he would have made about 42 additions on the eleventh and twelfth days, we obtain 455 additions as the total performance in the first five minutes of all twelve days.

In order to present the peculiar course of the work, determined as it is by the effect of the impediment, in an arithmetical statement, we have calculated the patient's work-values. The only figures that we can apply to our particular purpose are those of the total number of additions and of the average daily advance in practice.

Co-efficient of practice =  $35 - 38 = + 8.7$  *per cent.*

Additions in I 5' - additions in II 5' (with pause)

=  $180 - 193 = + 7.2$  *per cent.*

Additions in I 5' - additions in II 5' (no pause)

=  $190 - 202 = + 6.3$  *per cent.*

Difference =  $0.9$  *per cent.*

5' - 6' (with pause) =  $38 - 39 = + 2.6$  *per cent.*

5' - 6' (no pause) =  $40 - 39 = - 2.5$  *per cent.*

Difference =  $5.1$  *per cent.*

Co-efficient of fatigue =  $- 1.9$  *per cent.*

2' - 10' =  $35 - 41 = + 17.1$  *per cent.*

#### *Comparison of the Work-Values of Healthy Subjects and of Patients.*

Comparison of the results of our experiments on healthy subjects showed that the amounts of the work-values of which we could avail ourselves for the measurement of fatigue were extraordinarily different in different people. If we should speak of the "bounds of health" in reference to the highest and lowest work-values of healthy subjects, we might place Subjects 2 and 3 upon the upper boundary and Subjects 12 and 16 on the lower.<sup>(4)</sup> The work-values afforded by Subject 17 differ but little in amount from those of the healthy subjects most liable to fatigue. We may conclude from this that the liability

of healthy subjects to fatigue varies within wide bounds, and that it may reach a degree not far removed from the highly-exaggerated susceptibility to fatigue seen in Subject 17. This subject felt himself so much affected by his extreme liability to fatigue as to be incapable of strenuous mental work, even for a short time. As the liability of Subject 17 to fatigue must be regarded as morbidly exaggerated, and yet this subject is placed, with respect to his work-values, at the upper limit of the bounds of health, it does not seem to be unconditionally necessary that patients who complain of great susceptibility to fatigue should be far removed from the upper limit of the bounds of health. We may rather assume that here, as everywhere else, the transition from health to disease is not fixed, but that there are all sorts of gradations between the liability to fatigue of healthy and morbid subjects.

In Table III we have collected the work-values we obtained from all the healthy subjects, from Subject 17, with his great liability to fatigue, and also from the patients; 1 to 11 are twelve-day series, 12 to 16 eighteen-day series. In Column *j* the figure above the line gives the performance in the first five minutes of the first day, and the figure below the line gives the total performance in the first five minutes of all twelve days. The figures in Column *k* show the amount of the average daily acquisition of practice as a percentage of the performance in the first five minutes of the first day.

In Column *a* the highest values within the bounds of health are + 25.4 and + 22.9. Both these values are affected by impulse and have come out too high. The highest value uninfluenced by impulse, as far as we can tell, is the + 17.8 of Subject 3. Subject 17, who is very liable to fatigue, has the figure 20. Hence the figure 33.8, belonging to the patient P—, goes considerably beyond the limits of health. In Column *b* the values are quite irregularly positive or negative. But even if we neglect the error due to impulse in all the subjects, including the patient P—, he shows by far the greatest difference in Column *c*.

In Group *d*, the values fluctuate in Subjects 1 to 17 between - 0.4 and + 12.3. In Subject 2 we found that the reduction in the performance of work after the pause indicated great liability to fatigue. Here P— comes far below the worst values of the healthy subjects, with - 7.1. On the days without a pause



TABLE III.\*

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>j</i>	<i>k</i>
Subject.	<i>s'</i> ~ <i>6'</i> . With pause.	<i>s'</i> ~ <i>6'</i> . No pause.	Difference.	I ~ II. With pause.	I ~ II. No pause.	Difference.	Co-efficient of practice.	Co-efficient of fatigue.	<i>s'</i> ~ <i>10'</i> . No pause.	Total additions.	Advance in practice.
1	+ +25'4	-1'4	26'8	+ 1'3	- 7'0	8'3	+ +10'3	+ -13'2	- 14'4	<u>119</u> 2366	+ 8'4
2	+ +22'9	-2'7	25'6	- 0'4	- 8'9	8'5	+ +11'1	+ -17'95	- 13'9	<u>201</u> 3112	+ 4'7
3	+17'8	+ +3'1	14'7	+12'3	- 0'5	12'8	+17'8	-15'52	- 8'5	<u>111</u> 2781	+15'1
4	+ +19'3	+ +1'5	17'8	+ 3'9	- 5'0	8'9	+ 9'3	-13'4	- 4'3	<u>242</u> 4087	+ 6'3
5	+ +17'4	-0'5	17'9	+10'3	- 0'8	11'1	+ +12'5	+ -11'73	- 1'7	<u>234</u> 4127	+ 6'3
6	+16'5	-0'7	17'2	+ 5'8	- 6'2	12'0	+11'1	-15'51	-11'3	<u>185</u> 4348	+10'1
7	+13'4	+ ±0	13'4	+ 3'3	- 4'1	7'4	+ 9'7	-12'5	- 6'3	<u>233</u> 4083	+ 5'5
8	+10'0	-3'8	13'8	+ 2'4	- 7'3	9'7	+ 5'3	-11'8	- 6'6	<u>177</u> 3545	+ 8'9
9	+ 9'0	+ +0'2	8'8	+ 5'6	- 2'4	8'0	+ 9'0	- 8'8	+ 0'9	<u>213</u> 4039	+ 7'6
10	+ 4'9	-2'6	7'5	+ 1'9	- 5'1	7'0	+ 3'7	- 8'3	- 0'5	<u>296</u> 4412	+ 2'7
11	+ 3'5	+ +2'1	1'4	+ 2'5	- 6'3	8'8	+ 6'8	-12'1	- 2'0	<u>116</u> 2003	+ 6'9
12	+ 9'1	-1'7	10'8	+ 3'3	- 1'2	4'5	+ 6'2	- 6'8	- 2'6	<u>313</u> 5749	+ 7'3
13	+13'3	-2'7	16'0	+ 3'4	- 6'5	9'9	+ 3'4	- 9'4	- 6'6	<u>222</u> 4344	+ 8'0
14	+ 6'1	±0	9'9	+ 7'8	- 2'1	9'9	+ 5'1	- 7'7	- 3'0	<u>87</u> 3488	+29'6
15	+15'9	-1'1	17'0	+ 6'3	- 4'7	11'0	+ +14'9	+ -17'0	- 2'2	<u>177</u> 3797	+12'0
16	+10'0	+ +1'5	8'5	+ 0'9	- 2'5	3'4	+ + 7'9	+ - 9'5	- 1'7	<u>254</u> 4298	+ 5'0
17	+20'0	+0'7	19'3	+ 2'4	-11'1	13'5	+ 7'9	-16'6	- 13'0	<u>198</u> 4076	+ 8'4
P.	+33'8	+ +0'5	33'5	- 7'1	-17'9	10'8	+11'1	-25'8	-24'1	<u>169</u> 2193	+ 1'4
B.	+28'4	-3'3	31'7	- 3'7	-14'7	11'0	+ 7'8	-20'8	-24'0	<u>129</u> 1683	+ 1'5
Pf.	+18'6	-2'9	21'5	+ 0'1	-16'0	16'1	+17'4	-28'1	-27'5	<u>89</u> 1112	+ 1'6
J.	+20'4	-6'0	26'4	+ 1'8	-13'3	15'1	+11'3	-21'9	-14'9	<u>55</u> 840	+ 4'0
T.	+20'0	-9'6	29'6	± 0	-13'1	13'1	+23'8	-29'0	-12'5	<u>46</u> 664	+ 1'7
M.	+ 2'6	-2'5	5'1	+ 7'2	+ 6'3	0'9	+ 8'7	- 1'9	+17'1	<u>37</u> 454	+ 1'6

\* + = too high; \* = too low. Cf. the separate descriptions of the work-curves.

(Column *e*) Subject 2's performance of work has fallen 8.9 *per cent.* and Subject 17's 11.1 *per cent.* below their performance in the first five minutes. With these compare P—, with his enormous reduction of 17.9 *per cent.* In Column *f*, Subject 17 shows the greatest difference, with 13.5 *per cent.* P—, with 10.8 *per cent.*, would seem, at first sight, to come within the limits of health, but we have shown that in this case we cannot judge of the amount of the fatigue from the amount of the difference. The difference in the rate of work, according to whether there has been a pause or not, is comparatively small in the case of P—, because a considerable amount of fatigue remained even after the pause. P— did, however, recover to a great extent, as is shown by the increase in the value of his work in the sixth minute (Column *a*), and a large amount of his fatigue disappeared during the pause, but his recovery was only momentary. His rate of work was much reduced by the eighth minute—indeed, it was then below the rate of the fifth minute. It is because P— recovers far less from his fatigue during the pause than do the other subjects, and because the useful effect of the pause is far less in his case than in theirs, that the absence of the pause has not as bad an effect on the course of his work as it has on that of subjects whose fatigue disappears more completely during the pause. Moreover, as we have already shown, fatigue in his case reaches an extraordinarily high degree in the first five minutes, and its further advance takes place only slowly. Subject 17, in spite of his great liability to fatigue, always recovered so much better than P— during the pause, that the persistent effect of practice, reinforced by the practice freshly acquired, prevailed over that of fatigue. For this reason, the effect of the pause on the course of work made itself felt in a higher degree in his case than in that of the patient P—. That P—'s pure capacity for practice is no less than that of the other subjects is clear from the fact that in spite of his incomplete recovery during the pause, his work-values of the sixth minute are considerably higher than those of the second, and even of the first. Accordingly, we see that his co-efficient of practice is of normal amount. It is possible, indeed, that it may have come out too low, as the work done in the sixth minute may still have been affected by fatigue. Even so, the co-efficient of fatigue which we have calculated for P— with the help of his co-efficient of practice, is very

much higher than that of Subject 17, for all his liability to fatigue. P—'s great susceptibility to fatigue also appears very clearly in the difference between the work-values of the second and tenth minutes (Column *i*).

The absolute performance of the healthy subjects in the first five minutes of all twelve days varies from 2003 to 5749 additions. Their average performance is about 4000 additions. P—, with 2193 additions, shows a worse total performance than any of the healthy subjects but one, but his performance on the first day, amounting to 169 additions, is high compared with the work of those healthy subjects who also show a small total performance. From this we may conclude that P— made but little advance in practice in the course of the experiments. The average daily increase of practice, stated as a percentage of the performance of the first day, varies in the healthy subjects from 2·7 *per cent.* to 29·6 *per cent.*, the second greatest increase being 15·1. The extent of these variations is remarkably large, but it is explained by the facts that in Subjects 14 and 3 the first day's performance is unusually small—it is very likely that accidental influences have been at work here—and that the total performance of Subject 10 is extraordinarily great. Subject 10, at the time of the experiments, had for a long time been in the daily habit of solving arithmetical problems, and so began them with a high degree of practice; that is why his daily advance in practice comes out so small. P—, with his daily advance of 1·4, is far below the average values of the healthy subjects, a sign that his power of retaining practice was extraordinarily small.

Here it must be remembered that in P— the persistent effect of the practice in addition, that he had formerly had, both as a clerk and during the experiments made on him by Gross, cannot safely be left out of consideration. On the other hand, we must consider that he gave up his clerkship in 1897, and that Gross's experiments were made in 1898. At any rate, even if we cannot quite overlook the persistent effect of this practice, in spite of the length of time that has elapsed, it is not sufficient, by itself, to explain his small advance in practice. Even Subject 10, who had practised the solution of arithmetical problems up to the time when the experiments on him were begun, shows an average daily acquisition of practice equal to 2·7 *per cent.* of his performance at the beginning of the experiment.

The course of work shown by the patient B— is very similar to that of P—, but his work-values are on the whole rather smaller. They, too, fall quite outside the limits of health. The difference between the values shown in *d* and *e* is, again, smaller than in Subjects 5, 6, and 17, although the reduction in B—'s performance of work in the second five minutes on the days without a pause is considerably greater than the reduction in that of Subject 17. It would appear from the reduction in the performance on the days when there was a pause that considerable fatigue remained after the pause in this patient also. In spite of incomplete recovery during the pause, 4.8 *per cent.* more work was done in the sixth minute than in the first. Hence the capacity for practice does not seem to have been much impaired in B—.

Like his other work-values, B—'s co-efficient of fatigue indicates that his liability to fatigue was rather less than that of P—. Only in column *i* do both show the same reduction of work. The work of the first five minutes of the first day of experiment is within the limits of health and is greater than in four of the healthy subjects. The corresponding performance for all twelve days, however, is much smaller than that of Subject 11, who has the worst performance among the healthy subjects. The proportion between the performance on the first day and the performance on all twelve days points to only a small advance in practice. The average daily increase of practice is, in fact, only 1.5 *per cent.* of the performance on the first day. This shows the patient's small capacity for retaining practice.

In the patient Pf— the increase in the work of the sixth minute over that of the fifth minute on the days without a pause is smaller than in Subjects 1, 2, 4, and 17, but we were able to discover from his work-curves that the value of work in the fifth minute was increased by a final impulse. Consequently, the difference between the work of the fifth and sixth minutes does not give a correct picture of the patient's liability to fatigue. For the same reason the difference between the figures in columns *a* and *b* is valueless. In the five minutes after the pause (Column *d*) the performance improved a little, though only by 0.1 *per cent.* of the performance in the first five minutes; the effect of practice and the effect of the fatigue remaining very nearly balanced one another. On the days, how-



ever, when the work was done without a pause, it deteriorated even more than in the case of the patient B—. The dependence of the effect of the pause upon the degree of fatigue is very well seen in Pf—, as his performance after the pause was not subject to the same degree of fatigue as that of the two first patients. In spite of the fact that the reduction of work in the second five minutes is smaller than in P—, the difference shown in Column *f* is far greater. From this we may conclude that Pf— is unusually susceptible to fatigue, but is more capable of recovery than the two other patients. His co-efficient of practice has come out extraordinarily high, although we cannot discover any signs of impulse in the sixth minute. It is, however, conceivable that his performance in the second minute has come out too small because he began the work with an effort of will and then flagged in the second minute. We cannot be sure about this. The high co-efficient of practice has, of course, affected the co-efficient of fatigue, which may, perhaps, also have come out too high. Yet the high figures in Columns *f* and *i* also indicate that Pf— is extraordinarily liable to fatigue. The work of the first five minutes of the first day is about the same as that of Subject 14, but in that subject the work shows a great improvement from day to day, and a total performance of 3488 additions is finally reached, while Pf—'s total performance is considerably less than that of the patient B—. His capacity for retaining practice is very little greater than that of the two other patients.

The work-values of Patient J— are derived from an eight-day series of experiments. We have already pointed out that the effect of practice has a greater preponderance over that of fatigue in the first few days of an experiment than in the last. Consequently, the effect of fatigue is not so clear in the case of the patient J— as it would be in a twelve-day series. In spite of this, J— has higher figures in almost all the columns even than Subject 17. His performance of work on the first day and the total performance, which we have calculated for twelve days, are remarkably small. Both these values are considerably smaller than those of the patient Pf—. On the other hand, his average daily acquisition of practice is greater than that of any other patient or of Subject 10. Here too, however, we must remember that J— only worked for eight days, and that the improvement of his work by practice therefore shows up better

than that of the other subjects. At the same time, his acquisition of practice is less than that of any healthy subject, if we exclude Subject 10 for the reasons previously explained.

We have already expressed our opinion as to the impossibility of using the work-values of the patients M— and T— for the measurement of fatigue. We are not justified in inferring from these values the amount of the fatigue, because the course of work was principally determined by influences constituting an impediment. Only in the case of T— can we find signs of fatigue in the course of the work. Here the work deteriorates in the second five minutes, on the days without a pause, to the extent of 13.1 *per cent.* of the work of the first five minutes. This shows that T— was very liable to fatigue. On the other hand, we may regard it as certain that his real liability to fatigue was considerably greater than is shown by the course of his work, because the effect of the fatigue was concealed by that of the impediment. His absolute performance on the first day was even smaller than that of the patient J—. In the course of the twelve days of experiments it improved very little—only two additions a day.

Signs of fatigue are entirely absent from the course of work in the case of the patient M—. There were such long pauses between the separate additions that fatigue could have no effect upon the amount of work done. But while in T— the effect of the impediment increased as the result of the sense of effort, we can see from the work-curves of the patient M—that his rate of work improved a little under the helpful influence of practice and possibly also of momentum. This explains why he did more work in the second five minutes than in the first (Column *e*) even on the days without a pause. We can also point to a very small advance in practice during the whole series of experiments.

The patient's total performance amounts to 454 additions; that is to say that M— made an average of  $\frac{454}{12 \times 5} = 7.5$  additions a minute. Considering that the worst performance of the healthy subjects, that of a simple workman, amounted to  $\frac{2003}{12 \times 5} = 33$  additions a minute, and the best to  $\frac{5749}{12 \times 5} = 95$  additions a minute, we can easily see that M—'s capacity for work was as good as annihilated.

Briefly to sum up the results of those last experiments, we

have discovered, in the first place, that the patients P—, B—, Pf—, and J— are highly susceptible to fatigue. We had found that the liability to fatigue of Subject 17 only slightly exceeded the ordinary bounds of health, but nevertheless we had reason to suppose that it was morbidly exaggerated. Of the patients, J— comes nearest to Subject 17 in his work-values, yet there is a greater difference in their degree of susceptibility to fatigue between J— and Subject 17 than between Subject 17 and the most easily fatigued of the healthy subjects. We must also consider that J—'s work-values were taken from an eight-day series of experiments. The work-values of the other patients differ so much in their amount from those of healthy subjects, and even from those of Subject 17, that we are justified in assuming their liability to fatigue to be far greater even than that of the very susceptible Subject 17. With this extreme liability to fatigue is associated a diminished power of recovery. In all the healthy subjects, except in the single case of Subject 2, we have found that even great fatigue was so far recovered from during the pause, that the effect of practice could completely prevail over the remaining effect of fatigue. In contrast to this, the power of recovery of the patients P— and B— is extremely defective. In Pf— and J— the restorative effect of the pause was rather more favourable, but even in their case there was reason to assume that a great deal of the fatigue remained after the pause.

While the patients' pure capacity for practice does not seem to have been much reduced, it appears that their performance of work improved only very little from day to day. Their power of retaining practice must therefore be extremely small. Only in J— was the daily increase of practice rather greater, and even in his case it was less than in the case of those of the healthy subjects who showed least power of retention, if we neglect Subject 10, with whom no comparison can be made. Finally, comparison of the absolute amounts of work performed showed that the difference between the work of the first and second five minutes without a pause was always very much reduced in the patients.

In the case of the patients T— and M—, we were not able to estimate the liability to fatigue with any accuracy. The reduction of T—'s rate of work in the second five minutes (Column *c*) gave us grounds for supposing that he was very

easily fatigued. The true extent of his liability to fatigue may, however, have been far greater than appeared. In both patients the effects of fatigue were concealed by the effects of impediment. The absolute performance of T— and M— was so small, that we may conclude that their power of work was almost entirely lost.

### *The Detection of Intentional Simulation.*

In dealing with our patients, we were able to exclude the possibility of intentional simulation or exaggeration of the disturbances of which they complained, because their clinical observation precluded all doubt as to the real existence of their illnesses. But even had this unfailing source of information not been available, there are other considerations which make it improbable that the patients tried to cheat in their experimental work. Complicated as are the influences which determine the direction of the work-curve, we have always been convinced that there are certain invariable laws regulating the course of work and the mutual relations of the figures obtained by the comparison of the work-values. We were never able to discover that our patients' continuous work had been done in a way which contradicted the results of our other experiments, or that the comparative values obtained from them were different in their mutual relations from the values obtained from healthy subjects.

To set the applicability of our method to patients suffering from the results of accidents absolutely beyond the reach of objection, we must be able to give a satisfactory answer to the question whether it is not possible for a malingerer simulating great fatigue to observe these invariable laws which govern the course of work so accurately as to escape detection.

To decide this question, which is one of extraordinary practical importance, we have had some experiments carried out in the wilful simulation of abnormal fatigue. Three of the four subjects of experiment were familiar with the behaviour of the work-curves, while the fourth, who was a young lady, entered on the experiments quite unprepared and without any previous knowledge of the course of work. Each series consisted of six daily experiments. For three of the subjects the arrangements were exactly the same as we have employed elsewhere, but in



two series of experiments, which I made myself, I altered the conditions to a certain extent. The arithmetic books are printed with ten vertical columns of equal length on each page, each column containing thirty-six figures. As each minute's work is marked off by a stroke of the pencil, it is not very difficult to compare the work of the separate minutes, as the experiment goes on, so as to form an approximate idea of the number of figures one has added up in a minute, and to add the number, more or less, which one has pre-determined in the following minute. If one knew exactly how the course of work must change from minute to minute to reproduce the changes which take place in the case of patients suffering with abnormal liability to fatigue, it is conceivable that the simulation might be successfully carried out by this means. In order to deprive myself of this means of comparison I struck out a piece of different length in each column. As I had expected, this made it impossible to measure the amounts of work done in each minute, even approximately, with the eye or to compare them with one another.

TABLE IV.

	1	2	3	4	5	6	7	8	9	10	11	12
Sub- jects.	With pause. I ½ M. II ½ M.	No pause. I ½ M. II ½ M.	I M. ½ M.	I M. 2 M.	With pause. 6 M. 7 M.	No pause. 6 M. 7 M.	With pause. I M. 6 M.	No pause. I M. 6 M.	With pause. ½ M. 6 M.	No pause. ½ M. 6 M.	No pause. 2 M. 10 M.	Ad- vance in pra- ctice.
P.	- 7'1	- 17'9	- 23'3	- 7'1	- 13'2	- 6'3	+ 4'8	- 24'5	+ 33'8	+ 0'5	- 24'1	+ 1'4
B.	- 3'7	- 14'7	- 16'2	- 5'7	- 13'7	- 2'8	+ 3'2	- 19'6	+ 28'4	- 3'3	- 24'0	+ 1'1
Pf.	+ 0'1	- 16'0	- 18'2	- 10'7	- 10'0	+ 2'9	+ 0'8	- 23'2	+ 18'6	- 2'9	- 27'5	+ 1'0
J.	+ 1'8	- 13'3	- 13'2	- 6'2	+ 0	+ 4'2	+ 1'7	- 16'1	+ 20'4	- 6'0	- 14'9	+ 4'0
Dr. B.	- 3'5	- 24'6	- 38'4	- 13'1	- 14'7	+ 3'3	- 2'6	- 31'1	+ 75'1	- 32'9	- 46'9	- 1'1
Dr. St.	- 8'3	- 10'4	- 33'6	- 24'9	- 25'5	- 1'6	- 7'1	- 25'3	+ 38'8	+ 13'1	- 22'8	- 2'1
Frl. S.	- 26'5	- 37'6	- 50'4	- 24'9	- 25'5	- 3'0	- 25'4	- 51'6	+ 52'5	- 5'6	- 52'0	- 8'8
Dr. J. a	- 9'2	- 18'0	- 28'3	- 11'5	- 13'0	- 1'2	- 6'3	- 28'1	+ 34'5	+ 3'5	- 25'5	+ 4'0
Sp. { b	- 14'2	- 24'3	- 27'4	- 26'0	+ 9'1	+ 3'2	- 23'1	- 38'2	+ 59'7	+ 8'4	- 3'5	- 2'0

Table IV shows the results of the experiments, together with the corresponding work-values of the four patients P—, B—, Pf—, and J—. Columns 1, 2, 9, 10, 11, and 12 correspond to Columns *d*, *e*, *a*, *b*, *i*, and *k* in Table III.

We will first consider the work-values of the subject Dr. B—. In Column 1 the amount by which the work of the second five

minutes, on the days with a pause, differs from that of the first five minutes, is stated as a percentage of the work of the first five minutes. In this column Dr. B— shows the value of — 3·5 *per cent.*, about the same diminution of work as is found in the case of the patient B—. But while the greatest reduction among the patients on the days without a pause was only 17·9 *per cent.*, Dr. B— shows a reduction of 24·6 *per cent.* The difference between the work-values of the patients and Dr. B— becomes still more striking when we consider their work-values in Columns 3, 9, 10, and 11. No further comment is necessary; the figures themselves show, beyond all question, that Dr. B— has greatly overacted his part. In the other columns also, *e.g.* in Columns 4 and 8, which show the difference between the work-values of the first and second minutes on all twelve days and the difference between those of the first and sixth minutes on the days without a pause, he has considerably higher figures than the patients, but the differences are not so pronounced here as in Columns 9, 10, and 11. While the work of the sixth minute on the days without a pause is only 6 *per cent.* less than the work of the fifth minute (Column 10) in the patient J—, Dr. B— shows a reduction about five times as great. The deception is also completely exposed by the fact that the rate of work does not improve from day to day, but grows worse (Column 12). The advance in practice in a genuine case is certainly small, but it can never be a negative quantity.

Dr. St— has not, on the whole, overacted his part to the same extent as Dr. B—, but this makes the want of proportion between the separate comparative values all the more striking. Considering that his work in the second five minutes, on the days with a pause, is 8·3 *per cent.* worse than the work of the first five minutes, the diminution in the second five minutes, on the days without a pause, is far too small. We should have expected to find a considerably higher figure in Column 2, while the reduction of work we see in Columns 3, 4, 5, and 9 is remarkably great. The disproportion between the comparative values is even more obvious in Column 10. In this column, in which the difference between the work of the fifth and sixth minutes, on the days without a pause, is calculated as a percentage of the work of the fifth minute, we should have expected the preponderance of the effect of fatigue over that of practice to result in a reduction of work in the sixth minute, or

if the patient worked with impulse here, to allow, at the very most, a trifling increase. The increase of 13.1 *per cent.* can only be explained as a falsification of the results. Finally, the work grows less from day to day in the case of this subject also, and even in a higher degree than in that of Dr. B—.

Dr. B— and Dr. St— were both acquainted with the laws regulating the course of work. The next subject, Fraülein S—, had no such knowledge. The results of her experiments are therefore, for obvious reasons, of special interest for the detection of wilful simulation. It may be added that she was a lady of unusual intelligence, and had carefully considered her plan of simulation beforehand.

The results of her experiments bear throughout the mark of the most extreme exaggeration, and there are also remarkable contradictions in the mutual relations of the comparative values. That the subject was very far from being able to observe the invariable laws which regulate the whole course of work is made particularly clear by the way in which the work varies from day to day. The work of the first five minutes on the six consecutive days amounts to 125, 95, 85, 82, 66, and 65 additions—that is, it deteriorates progressively from day to day by an average of 8.8 *per cent.* of the work done on the first day. The subject has entirely omitted to take account of the factor of practice in her work.

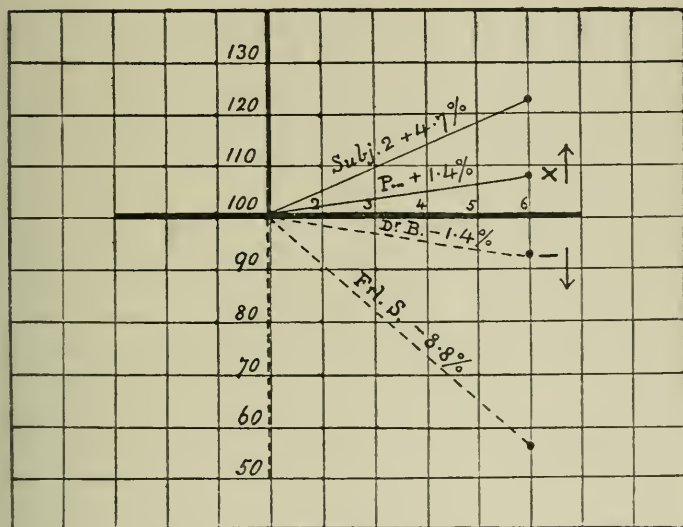
In the following figure (Fig. 24) we have tried to give a graphic representation of the gain or loss of practice simulated in wilful deception and its disagreement with the invariable relations found in patients and in healthy subjects.

The days of experiments 1 to 6 are marked on the horizontal line, and the daily increase of practice stated as a percentage of the work of the first day, is shown on the vertical line. If the point of intersection of the vertical and horizontal lines is connected with the co-ordinate points a straight line is obtained, representing a linear function, the angle of which is determined by the gain or loss of practice. In this way we have represented the advance in practice, or the reverse, of Subject 2, with an average daily gain of 4.7 *per cent.* of the work of the first day, of the patient P— with a gain of 1.4 *per cent.*, and of Dr. B— and Fraülein S— with a loss of 1.4 *per cent.* and 8.8 *per cent.* respectively. As P— shows the least advance in practice of all the patients, and Subject 2 the least of all the healthy

subjects, excluding Subject 10 for the reasons previously given, the curves of the other patients would fall between the curve of Subject 2 and that of the patient P—, and the curves of all the healthy subjects between that of Subject 2 and the vertical. In other words, they would rise considerably above the horizontal line. The curves of the subjects who have simulated abnormal fatigue fall, on the contrary, below the horizontal, thus departing from the necessary and invariable course of the curves. Thus the deception becomes obvious.

It is sufficiently proved by the experiments we have described

FIG. 24.



that not even an accurate knowledge of the nature and effect of the various influences governing the course of work can enable anyone to simulate abnormal fatigue without betraying his intention by extreme exaggeration and gross disproportions between the comparative values. If the attempt is to succeed at all, the subject must not only have an exact idea of the way in which the amount of work done changes from minute to minute in the special case of patients suffering from increased liability to fatigue, but must also be able to make the exact number of additions that he intended every minute. I knew myself, from my study of their curves, how the work that my patients did varied in every separate minute. I was therefore in a position



to calculate exactly, before the experiment, how many additions I must make in every minute in order to produce changes in the course of the work corresponding in all their details with those which occurred in the work done by my patients. The principal difficulty was this: I had in the first place to count the additions I made as I went on, and secondly, to estimate the time when the minute would come to an end. The first condition was particularly hard to satisfy, for, as I have explained, I had made it impossible to tell the number of additions I had made from the length of the columns. I therefore had recourse to marking the seconds by a regular movement, practised beforehand, of one of the fingers of my left hand, which was imperceptible to the person conducting the experiment, and tried to make the additions in time with this movement. As I had expected, I succeeded fairly well, after long practice, in marking the seconds correctly. It was more difficult to count the movements and make the additions simultaneously, but this, too, I practised for a considerable time.

It appears from the results set down in Table IV (Dr. Sp—, *a*) that my work-values corresponded fairly well with those of the patients, and that the advance in practice, in particular, was pretty well imitated. On the other hand, a closer inspection shows a disproportion between the comparative values. It seems unnecessary to point out that the employment of so complicated a method would hardly occur to any malingerer. Still, I thought it worth my while to take into account the possibility even of so elaborate an attempt at simulation.

I also made a second series of experiments to see what form the course of work would take when the subject was not able, as I had been, to compare the work of the separate minutes, and the use of my complicated method was impossible.

The work-value in the very first column (Dr. Sp—, *b*) shows that I exaggerated considerably, and the same conclusion must be drawn from the values in Columns 2, 3, and 4. Besides this, there is a gross contradiction between the values in Columns 3 and 4. If the reduction of work amounted to 26 *per cent.* between the first and second minutes, it must have been very much greater by the fifth minute. The falsification evident here also appears in the values of the following columns. In Column 5 we find a great reduction of work between the fifth and sixth minutes in the case of all the first three patients, and only in

that of J— are the values equal. I ought to have had a minus quantity here, since the work should have decreased from the sixth to the seventh minute as the result of great liability to fatigue.

The last three work-values also are evidently falsified. In Column 10 P— shows the trifling increase of 0.5 *per cent.*, and that only because he worked with an effort of will in the sixth minute. The impulse could only produce a very small improvement in his work, because the effects of fatigue had already gained too great an influence over the course of the work. I, who seemed, according to my other work-values, to be even more susceptible to fatigue than P—, ought to have been able to make very little improvement, or none at all, in my values, even if I worked with impulse in the sixth minute. Finally, the slight reduction in my work from the second to the tenth minute is a gross contradiction of my other work-values, and the minus quantity in Column 12 is opposed to the principles which determine the growth of practice.

It is clearly and incontrovertibly proved by the results of these five sets of experiments that we are able to detect intentional simulation by our method. Even those subjects who are fully acquainted with the laws that regulate the course of work are betrayed at once by their extreme exaggeration of the susceptibility they would simulate, and by a disproportion between the comparative values.

There is still a possible mode of simulation which we must consider to complete our discussion of the subject. We have seen in the case of our patients P— and M— that the absolute amount of work they did was extraordinarily small, and that the number of additions hardly varied from minute to minute or from day to day. Although it is altogether improbable that anyone about whom there was a question of simulation would know the details of such a course of work as was performed by these two patients, the possibility cannot be excluded with absolute certainty. In such a case, it is conceivable that the malingerer might try to make his work resemble theirs—that is, to make about eight additions in every minute. The attempt would not be difficult to carry out in itself. But it must be observed, in the first place, that even the work of these two patients followed certain laws in its course, as is shown more especially by their regular advance in

practice. Secondly, and here is the difficulty, such a course of work as we met with in patients T— and M— is only possible when the work comes under the influence of a very severe impediment. Where an impediment of this kind is actually present, the general clinical picture is such as to leave no room for doubt about the reality of the morbid disturbances. From this it follows that, in the case supposed, there would not be the slightest difficulty in detecting the imposition.

### *Recapitulation.*

The object of this work has been to discover a method by which it might be possible to measure fatigue clinically. The method itself is based on the results obtained by Kraepelin from his preliminary investigation of the influences determining the course of work. The accurate comprehension of the composition of the work-curve is an indispensable preparation for the use of the method of continuous work for the purpose of measuring fatigue. Our method has, therefore, been developed in close dependence on the work of Kraepelin and his pupils. To measure fatigue in our patients we had first to obtain comparative values from healthy subjects. With this object we carried out experiments, lasting for twelve or eighteen days, on a considerable number of healthy people. By this means we discovered that the amount of liability to fatigue existing in healthy people is very variable, and that the liability may reach an extraordinarily high degree even within the bounds of health. We have tested the usefulness of the method in the clinical measurement of fatigue by applying it to patients in whom greatly increased liability to fatigue is a regular symptom. Our comparison of the work-values of healthy subjects and of patients has brought to light the fact that the patient's liability to fatigue is considerably greater than that of the most susceptible healthy subjects. We were able to present the difference in a series of arithmetical statements. From all this we may draw the conclusion that the method has made good its claims, and, therefore, may be applied to the object of clinically measuring fatigue.

For determining the amount of the effects of fatigue we had a number of comparative values at our disposal in each individual case. The difference between the work-values of the fifth and sixth minutes, on the days with a pause, and the

difference between the differences in the work of the first and second five minutes, on the days with and without a pause, were particularly useful for our purpose. We had expected that these two comparative values would correspond to one another. In many cases they did not, but we were able to show from the work-curves that the amount of the values of the fifth and sixth minutes was affected by impulse in many people. We were also convinced that the amount of the effects of fatigue could not be discovered from the difference between the work on the days with and without a pause in the case of people whose work showed a diminution in the second five minutes, even on the days when there was a pause. The reason for this was that, in such people, great remains of fatigue persisted after the pause, and its useful effect was, therefore, unable to make itself felt to the same extent as if there were more complete recovery from fatigue. These two facts explained the apparent contradiction between the comparative values in an absolutely satisfactory way.

The fact that the amount of the difference between the differences in the work of the two periods of five minutes, on the days with and without a pause, cannot be employed in such a case to determine the amount of the fatigue does not particularly increase the difficulty of measurement. The great decrease in the work of the second five minutes, on the days both with and without a pause, points at once to great liability to fatigue. The error arising from impulse, which more or less affects the work-values of the fifth and sixth minutes, on the days with a pause, may also be neglected, as a rule. But where the separate comparative values are out of proportion to one another it will be as well to consider the possibility that the values of the fifth and sixth minutes may be influenced by impulse, and this can best be done by reference to the work-curve. Examination of the work-curve affords the best means of judging if the work has been affected by impulse.

Of the other comparative values we have employed for determining the amount of fatigue, the co-efficient of fatigue, as we have calculated it, is perhaps the least reliable. It is true that we found certain points of agreement to exist between it and the other comparative values, and that it was always greater in the patients than in the healthy subjects; but as it could only give an approximate and very inexact idea of the true amount of the



effects of fatigue, while the other comparative values have proved to be sufficient without it, one might give up calculating it. On the other hand, the value which we calculated from the difference between the work-values of the second and tenth minutes, on the days without a pause, has proved to be extremely useful.

The results we have obtained from our experiments are derived from series of twelve, or occasionally of eighteen, days. We continued the experiments for this length of time because, on first testing the method, it was important to obtain the most reliable average values possible and the least affected by accidental influences. Very probably shorter experiments, continued for a few days only, will be sufficient to determine the amount of the effects of fatigue in a perfectly reliable way.

The measurement of fatigue in traumatic neuroses in particular has shown that the patients' liability to fatigue is greatly increased, that they have very little power of recovery, and that their capacity for work is much reduced. Their capacity for practice does not seem to be much impaired, but the traces of practice disappear extraordinarily quickly, their power of retaining practice being very small.

In the case of two patients it was impossible to determine their liability to fatigue in arithmetical terms, but we were able to discover that their work was affected by a severe psychogenic impediment, which had practically destroyed their capacity for work.

Finally, the method has to the fullest extent made good its claim to be a means of detecting intentional simulation. We were able to prove with certainty that it was impossible, even with an accurate knowledge of the laws which govern the course of work, intentionally to alter one's way of working for the purpose of malingering so as to observe these laws without any contradictions. Intentional simulation is at once betrayed by its extreme exaggeration of the morbid disturbances it imitates and by the disproportions between the comparative values.

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(1) Kraepelin's *Psych. Arb.*, vol. ii, p. 577.—(2) *Münchener med. Wochenschrift*, 1898, No. 49.—(3) Cf. Gross, *Ibid.* P— is the same patient in whom Gross measured fatigue.—(4) Cf. Table III.

*A Contribution to the Study of Dementia Paralytica in Brazil.* By JULIANO MOREIRA, M.D., Medical Director of the National Hospital for the Insane, Rio de Janeiro, and ANTONIO PENAFIEL, M.D., Ex-assistant (<sup>1</sup>).

BRAZIL, with its vast area, comprising a fifth of the western continent, its various climates, and its population of 21,000,000, formed of several ethnical groups, offers an admirable field for the study of the comparative racial pathology of the insanities.

We have the so-called "white races," represented by the Portuguese, Spanish, Italian, German, Swiss, English, French, Belgian, Hungarian, Polish, Russian, Scandinavian, Dutch, Danish, Greek, and Syrian immigrants and their pure descendants. China contributes the "yellow man" and Africa the negro. These, with the aboriginal Indian and the numerous mestizos of various races, complete an enumeration serving to show the composite character of the Brazilian population.

Did space permit, it would be interesting to study the manner in which the various ethnical groups have intermingled to form what may ultimately become the definite Brazilian type.

Though a new country, Brazil already affords abundant opportunities for the study of the various neuropathies. Statistics have proved the rapid increase of psychoses, and the Government has been obliged to make more extended provision for the care of the insane.

The causes of this increase must be sought for in the rapid intellectual development of our time, the steadily increasing competition, the fears of political, financial and commercial crises, and the overcrowding of our great towns, all tending to intensify the keenness of the struggle for existence of modern life.

The immense advances in intellectual and political life have not been accomplished without a great expenditure of mental energy—an expenditure which must be continued if we are to keep what has already been acquired.

We do not, however, in the present paper, intend to review the various forms of insanity occurring in Brazil. We desire merely to present some statistics of general paralysis in this country, adding certain observations suggested by the facts

gathered therefrom, in the hope that such a task may add something to the knowledge of that very interesting disease as it occurs in our own country.

The statistics of our asylums do not show any alarming increase in the occurrence of the disease, but these statistics are less trustworthy than those derived from European sources, and that for two important reasons—firstly, our people, especially those of the better classes, usually keep an afflicted relative at home as long as his condition permits them to do so, and secondly, the disease in most instances still passes unrecognised by the general practitioner, at least, in the early stage, or when it assumes an atypical form, the syndrome too often being diagnosed as neurasthenia, hypochondriasis, or cerebral syphilis.

The statistics of the Hospicio nacional de Alienados de Rio show during the period from 1889 to 1904 an admission of 9609 insane, 5878 being males and 3731 females. Of the total number admitted 266 were general paralytics, giving a percentage of 2·76. On comparing this with the percentages given by the following statistics obtained from other countries a marked difference is to be noted.

In Russia, Dr. B. Greidenberg, of the Kharkow Ziemskoi Hospital, gives 8·8 *per cent.* for the years 1890 to 1901. But Dr. Idanow, from the statistics of several asylums, reports a percentage of 18·18.

In 3916 cases admitted to the Psychiatric Clinic of the University of Moscow from 1887 to 1901, Professor S. Soukhanoff and P. Gannouchkine found 17·42 *per cent.*

In Germany, Weygandt gives the percentage as from 10 to 15; Siolli found 26 *per cent.*

In Hamburg, Kaes found 14 *per cent.* in 10,148 insane patients.

In Austria, Meynert found in 8546 cases 34·6 *per cent.*

In Belgium, in 7656 cases admitted at Gheel, Peters reports 16·6 *per cent.*

In Italy, Roscioli found 10·5 *per cent.* In Genoa, Giovanni de Paoli found 31·5 *per cent.*

Professor Bianchi, in 555 cases admitted to the Provincial Manicomio of Naples from 1891 to 1893, reports 13·7 *per cent.* Dr. Lojacona reports at the Manicomio de Palermo a percentage of 10·75.

In Denmark, the statistics of the Saint Hans Asylums pub-

lished by Rohwell and Jehersen, show in twenty years a percentage of 17·31. But, following these, Jacobson gives statistics of the same asylum for a period of seven years, showing 23 *per cent.* general paretics.

In England, Dr. Thurnam gives the percentage as 24·33. Dr. Oscar Woods gives 12·5 *per cent.* for England, 4 *per cent.* for Scotland, and only 1·1 *per cent.* for Ireland.

In France, Dr. Planès gives 17 *per cent.* Dr. Laurent puts the percentage in the public asylums of that country at 18. In Paris it is much higher, Charenton Asylums showing 46 *per cent.* amongst the male insane and 5 *per cent.* in the women's division. In the private asylums it varies between 35 and 44·4 *per cent.*

In Switzerland, Dr. Camuset, Saint Alban's Asylum, Lazère, found in 200 admissions, during a period of ten years, a percentage of 5.

In Greece, Dr. Yamiris, Dromocaitis Private Asylum, Athens, observed 19·89 *per cent.* in 1136 patients, from 1887 to 1902. Dr. Scarpas reports 9·7 *per cent.* in the Corfu Asylums.

In Portugal, Professor Bombarda, Rilhafolles, Lisbon, in 2782 admissions from 1892 to 1902 found 10·1 *per cent.*

In the United States of North America, statistics collected from various sources since 1849 by Dr. O. G. Wagner show that there has been a gradual increase from 1·5 *per cent.* to 12 *per cent.* on all admissions. Data from the Manhattan State Hospital East show a percentage of 8·75.

The infrequency of general paralysis in tropical countries has been asserted more than once. Van Brero writes:

*Dementia paralytica ist eine Irrseinsform, welche in tropischen Ländern wenig beobachtet wird.*" In Java, among 230 patients he found only two general paralytics. Manning, in New South Wales, writes: "I have never seen or heard of a general paralytic."

Law, in the *Georgetown Reports* for 1887, says: "As regards general paralysis of the insane it is undoubtedly very rare in the colony, and was, in fact, till recent years unknown."

Barnes, in 1891, says: "General paralysis has been repeatedly declared to be non-existent; but it does exist, and is not uncommon."

Friedrichsen, quoted by Jeanselme, saw no cases of general paralysis in Zanzibar—a hot climate—but it is interesting to



note that Ehlers says that in Iceland—a cold climate—the syndrome is unknown.

Nevertheless, we do not consider that climate influences the frequency of the occurrence of the disease. Its incidence is, in our opinion, regulated by those factors of modern civilisation which intensify the stress of life. Excessive mental and emotional strain, alcoholism, sexual excesses, etc., weaken the resisting power of the nervous system and render it liable to be affected in a special manner by the toxins of syphilis and other etiological factors, which are the direct cause of pathological changes.

The percentage amongst the Brazilian patients and that of the foreigners admitted to the National Hospital in 1889 to 1904 were about equal.

Of the 1091 patients admitted to Dr. Eiras' private hospital in Rio from 1889 to 1903, 4·3 *per cent.* were general paralytics.

In 1889 Professor Teixeira Brandao reported to the Brazilian Congress of Medicine of Rio de Janeiro that of 670 patients observed from 1883 to 1888 in Rio and Niteroy asylums, only 1·6 *per cent.* were affected with general paralysis. At the same congress Dr. Eiras reported a percentage of 6·22 in 610 admissions to his private hospital; but here it is important to note that at that time nearly all the well-to-do patients of the other states were removed to the private hospitals in Rio.

*State of S. Paulo.*—In the public asylum of this State, Dr. Franco da Rocha found in ten years—1894 to 1904—among 1057 Brazilian patients a percentage of 3·87 general paretics, and among 626 foreigners admitted during the same period the percentage was 8·3.

*State of Rio Grande do Sul.*—In St. Peter's Asylum, from 1884 to 1904, Drs. Dias de Castro and Tristao Torres found in 2252 admissions a percentage of 1·46 paretics, *viz.*, 27 Brazilians, 3 Portuguese, 1 Italian, 1 German, and 1 African.

*Race and general paralysis.*—The relation of race to insanity has been studied by some authors, but the data are too incomplete and imperfect for positive generalisations. No information of value on this point can be gleaned from statistics owing to the loose definition of the ethnical groups contentedly accepted by the North American and Brazilian physician. As an illustration we may quote Babcock as saying: "The term 'coloured insane' is here applied to all persons of African descent, to full-blooded negroes as well as to half-breeds." In Brazil our

colleagues are satisfied with the imperfect classification: white, mulatto, negro.

Our statistics show that there is no race immunity from the various forms of insanity.

Some years ago it was thought that the negro was exempt from the disease under discussion. Dr. Roberts, of the Eastern North Carolina Insane Asylum, in 1883 had never met with general paralysis among his coloured patients, nor had Dr. Powell, of Georgia, in 1886 ever seen a case in a "full-blooded negro." But the investigations of Kiernan, Berkley, and others show that the negro does not enjoy an immunity.

We ourselves have observed the disease in members of all the ethnical groups inhabiting Brazil, with the exception of the pure aborigine and the directly-imported African negro. The disease frequently assumed the apathetic form, and there was nothing in the symptomatology peculiar to the various groups. Such differences as did exist were individual, and due to the degree of civilisation and education attained by the patient.

The exalted type was seen by one of the writers in the case of a mulatto, the offspring of a European and a negress. He had been an intelligent army physician, and by his own merits had obtained a good practice in an important capital in the Union. In the course of his illness he showed the grandiose delusions so commonly observed in the disease in Europe.

Another interesting case was that of a mulatto, a captain of an engineer corps, who became governor of an important state in Brazil. Here also the disease showed all the exuberant symptomatology of the classical type.

Owing to the deficient classification of the ethnical groups by means of the colour of the skin we have on the statistics of our hospital among 148 Brazilian men, 99 whites, 36 mestizos, 10 blacks, and 3 unclassified; among 9 Brazilian women, 3 whites, 4 mestizos, and 2 blacks!

Table III shows the nationalities of the foreign patients on the statistics of the hospital.

*Influence of sex.*—In various European countries the proportion of female general paretics to males varies considerably. Saunder in 1870 gives the highest proportion, *viz.*, 5 to 7! Krafft-Ebing, Schüle, and Sioli give 1 to 7, Greidenberg 1 to

6, Stark 1 to 5, Mickle, Siemerling, Keilner, Roscioli 1 to 4, Peters, Kaes, Thurnam, Giovanni de Paoli, and Bianchi 1 to 3, Jacobson 1 to 3·6, Weygandt 1 to 3·5, Meynert and Idanow 1 to 3·4, Planès 1 to 2·4.

In the National Hospital for the Insane at Rio there is a proportion of 1 female to 18 males in a total of 266 general paretics. Of the females, 9 are Brazilian and 5 foreigners. In Dr. Eiras' Hospital the proportion is 3 women to 82 males. Dr. da Rocha, at the S. Paulo Hospital, found 3 female paretics to 90 males among a total of 1753 insane observed from 1894 to 1904.

Our statistics show that general paresis in females is much less common here than in other countries, the difference perhaps being due to the fact that our women have not yet entered into competition with the male sex in the affairs of business and public life.

The clinical history of the female general paretic in Brazil introduces no new features. Compared with that of the male sex it runs a slower, more even, and less explosive course. The maniacal outbreaks are not so expansive, the delusions of grandeur not so pronounced, the periodical exacerbations and remissions are not so frequent nor so well marked as in the male. A form of quiet dementia is the prevailing type.

*Age.*—The great majority of cases occur between thirty-five and forty-five years of age.

The following table is from the statistics of the Hospicio Nacional de Alienados.

From 20 to 23 years	.	.	.	3 cases.
" 24 " 27 "	.	.	.	6 "
" 28 " 30 "	.	.	.	24 "
" 31 " 35 "	.	.	.	58 "
" 36 " 40 "	.	.	.	61 "
" 41 " 45 "	.	.	.	51 "
" 46 " 50 "	.	.	.	28 "
" 51 " 55 "	.	.	.	13 "
" 56 " 60 "	.	.	.	7 "
" 61 " 65 "	.	.	.	4 "
" 66 " 70 "	.	.	.	2 "
Unknown.	.	.	.	9 "

On the statistics of Dr. Carlos Eiras' private hospital we have :

From 20 to 30 years	.	.	.	6 cases.
" 31 " 40 "	.	.	.	18 "
" 41 " 50 "	.	.	.	15 "
" 51 " 60 "	.	.	.	8 "

Early cases of the adult form of general paralysis occur also in Brazil. We have met with cases in which the disease has come on at twenty-three and at twenty-four years of age.

Franco da Rocha, of S. Paulo, has also observed general paralysis in several patients of twenty-five years of age.

The youngest subject of general paralysis admitted to the Hospicio Nacional of Rio de Janeiro was twenty years of age.

### *Juvenile General Paralysis.*

Prior to 1877 general paralysis of the insane was believed to be only a disease of adult age. In that year Dr. Clouston described, in the *Journal of Mental Science*, a case of the disease in a boy, æt. 16, and he pointed out that, clinically and pathologically, the disease that affected his patient in no way differed essentially from the adult form. He designated it "developmental general paralysis," and it was looked upon by him as an extremely rare disturbance. Since his article cases have been published in Germany, Austria, France, etc., and as the knowledge of this morbid condition has become more common, so the number of cases has increased. Especial attention has been drawn to the early form of paretic dementia by Krafft-Ebing, Karplus, Alzheimer, Gudden, Regis, Haushalter, Mott, and others.

In 1895 Alzheimer, in a very valuable monograph, was able to collect only thirty-seven published cases, to which he added three cases of his own, with careful microscopical examinations of the nervous tissues. In 1898 Dr. Thiry collected and analysed sixty-nine published cases, which include all those of Alzheimer with three cases from the clinic of Haushalter, which he has observed. Dr. Frederick Walker Mott, the distinguished director of the pathological laboratory of the London County Asylums, has recently published notes of twenty-two cases of juvenile general paralysis occurring in the London County Asylums during three years. The number of cases recorded increases every year, and, although the disturbance is rare, it will be seen from the foregoing remarks that it occurs much



oftener than was hitherto supposed. Here in Brazil we have only an account of two cases—one by Professor Teixeira Brandao, the other by one of the writers. No doubt a great many cases would not be recognised, especially in the early stages of the disease, because of the difficulties in diagnosis, which are more or less considerable.

The following case was diagnosed "a case of imbecility," by two medical men, not alienists:

M—, white, single, needle-woman, æt. 18.

*History*.—No insanity in the family (?). Very little history could be obtained. Her mother was nervous and excitable. Father nervous and syphilitic.

*Personal history*.—Patient was a full-time child and her birth was uncomplicated and natural. Her health was good until eight years old. Her eyes were always healthy, but the milk-teeth were very bad. Mentally she was always deficient. She was sent to school when six years old, but was removed because her education was considered hopeless.

At twelve years she had her first fit when playing in the garden. She suddenly became unconscious, and lay for two hours with her face pale, lips blue, and her eyes open. From this time she gradually got worse, becoming day by day more weak-minded. From time to time occurred a fit of a similar character to the first. She became very spiteful, biting those who came in contact with her.

*Condition when seen, September, 1902*.—Patient has an imbecile, childish expression, and speaks in a childish manner and in a very nasal tone. Her speech is hesitant, tremulous, and syllabic. Attention difficult to obtain. Appeared to understand very simple questions, but was unable to frame a reply. She can stand and walk, but her gait is very unsteady, and she walks with a wide base, hardly raising her legs.

The central incisors are peg-shaped and notched, and there are linear erosions of the enamel.

The tongue is protruded by a succession of inco-ordinate, irregular jerks, and there is marked fibrillary tremors both in it and in the muscles of the face.

The pupils are dilated, unequal, irregular, and do not react to light, and but sluggishly on convergence.

The knee-jerks absent. Plantar reflex present. Tremor in the extended fingers. Taste and smell are good, and there is

apparently no loss of the sensations of touch or pain. Although eighteen years of age there is very little hair on the pubes. Her hands and feet are somewhat blue and very cold. Her appetite is exaggerated. She has lost control over her bladder and bowels.

### *Professions and Occupations.*

It is easy to see how certain professions favour the occurrence of several forms of insanity more than others, but with regard to general paresis the influence of occupation is not evident. It has been said that it is a disease of the higher educated classes as distinguished from the labourer or wage-earner, but this is not strictly true, for here in Brazil it affects all classes, without regard to social or financial position or education, and this fact is becoming more evident as the disease becomes more frequent. The statistics of the Hospicio Nacional and of Dr. Eiras' Hospital show that in Rio de Janeiro all classes and professions are represented among the paretics. In Brazil, if any pursuit is especially more liable to the incidence of this disease, it appears to be the commercial (*vide* Table IV).

Of the 266 paretics in the Hospicio Nacional there are 80 (excluding 1 female) whose occupations are unknown, the presumption being that they are of a low class.

It is to be remarked that about half of our patients are illiterate. The women were all of an inferior class and all without education.

Of the paretics at the S. Pedro Hospital, Rio Grande do Sul, the occupations are as follows :

Rural pursuits. . . . .	9	Mason . . . . .	1
Merchants . . . . .	3	Carpenter . . . . .	1
Soldiers . . . . .	2	Tailor . . . . .	1
Public functionary . . . . .	1	Shoemaker . . . . .	1
Clergyman . . . . .	1	Unknown . . . . .	12

The following is from Dr. Moreira's private practice :

Merchants . . . . .	8	Physicians . . . . .	2
Engineers . . . . .	3	Army Physician . . . . .	1
Military engineer . . . . .	1	Lawyers . . . . .	2
Statesmen . . . . .	3	Army officer . . . . .	1
Marine officers . . . . .	2	Capitalist . . . . .	1
Master mariner . . . . .	1		

*Civil state.*—Of the 266 general paretics at the National Hospital of Rio, 113 are married, 102 single, 22 widowed, and 29 unknown.

In Dr. Eiras' Hospital there are 32 married, 14 single, and 1 widowed.

Kraepelin, Defendorf, and other authors say that the disease is more frequent among the unmarried, but our statistics do not support that statement. One of the writers of this article (Dr. Moreira) has met with only two cases amongst the unmarried in his private practice.

*Duration of the disease.*—The following table shows the time of residence of the patients in the National Hospital from admission till death.

1 to 10 days . . . . .	7
10 „ 29 „ . . . . .	8
1 month . . . . .	35
2 months . . . . .	36
3 „ . . . . .	27
4 „ . . . . .	17
5 „ . . . . .	24
6 „ . . . . .	11
7 „ . . . . .	5
8 „ . . . . .	7
9 „ . . . . .	3
10 „ . . . . .	5
11 „ . . . . .	5
1 year to 1 year and a half . . . . .	16
1 „ and a half to 2 years . . . . .	17
2 years to 3 years . . . . .	6
3 „ 4 „ . . . . .	1
8 „ . . . . .	1

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Total 231

Of the 35 others, 13 are still in the hospital; the remaining 22 had remissions that permitted them to return to their families. Relatively the onset of the paralysis was later in the women than in the men.

That 190 cases died within a year of their admission shows the rapid course which typical general paralysis runs now and then here in Brazil. However, several of the patients were admitted in a fairly advanced stage. The question arises how

long the patients are affected prior to admission. Dementia paralytica, in our experience, here in Brazil, usually leads to death in the course of a few years.

Now and then it may last for six or eight years, or sometimes perhaps even longer, but the end generally comes in four or five years, and often very much sooner.

Among the cases occurring in the private practice of one of the writers (Dr. Moreira), only one patient lived more than five years. On the other hand, we have seen eight paralytics die a few weeks after the occurrence of the second stage, either from exhaustion attending intense agitation or from a simple progressive decline in the vital metabolism, the end being preceded by a series of apoplectiform seizures.

With regard to the mental state of the general paralytic in Brazil, we have classified 200 cases drawn from hospital and private practice, as follows :

Those with grandiose delusions or excess of euphoria at any stage of the syndrome, 96 cases, or 48 *per cent*. Those who exhibited simply a progressive dementia, 72, or 36 *per cent*. Those who were depressed and never had any excess of euphoria, 32, or 16 *per cent*. Several cases were not grandiose on admission, some were even depressed and afterwards became grandiose. All these are included in the first category. Suicidal tendencies were by no means rare.

The physical signs of these 200 cases were investigated with regard to oculomotor abnormalities, slurring of speech, and state of knee-jerks on admission, the results being as follows :

Pupils unequal . . . .	95
„ equal . . . .	98
„ not recorded . . . .	7
„ fixed to light (one or both) .	63
„ sluggish . . . .	98
„ normal . . . .	35
„ not recorded . . . .	4
Slurring of speech . . . .	175
Speech clear . . . .	23
Not recorded . . . .	2
Knee-jerks normal . . . .	12
„ absent . . . .	55
„ increased . . . .	90
„ diminished . . . .	39
„ not recorded . . . .	4



With regard to etiology, one of the writers, while not subscribing to the dictum "no syphilis, no general paralysis," believes in the preponderating influence of syphilis as an etiological factor of the syndrome. In 60 cases observed by him 30 *per cent.* had had syphilis; in 50 *per cent.* syphilis was probable; in the remaining 20 *per cent.* there were no signs of the disease to be found.

Other factors reported in the antecedents of the patients are alcoholic and sexual excesses, head injury, mental shock, and insolation.

Mental strain, excessive work under trying circumstances, and painful emotions are reported among the causes of the syndrome, which arises in most instances from cumulative factors prolonged through a series of years.

TABLE I.—*Showing the number of admissions of each sex to the Hospicio Nacional de Alienados de Rio de Janeiro (1889—1904).*

Years.	Brazilians.		Foreigners.		Total.
	M.	F.	M.	F.	
1889	33	34	12	14	93
1890	181	139	123	55	498
1891	110	48	118	26	302
1892	162	149	219	80	610
1893	185	141	126	58	510
1894	267	215	160	64	706
1895	276	197	175	58	706
1896	232	148	208	77	665
1897	241	239	201	61	742
1898	278	267	171	69	785
1899	241	217	173	83	714
1900	229	216	122	48	615
1901	253	195	144	49	641
1902	247	199	143	54	643
1903	275	249	156	37	717
1904	265	194	152	51	662
Totals .	3475	2847	2403	884	9609

TABLE II.—*Showing the Nationality of the Foreigners admitted to the Hospicio Nacional de Alienados de Rio de Janeiro (1889—1904).*

Nationality.	1889 to 1892.		1893 to 1896.		1897 to 1900.		1901 to 1904.	
	M.	F.	M.	F.	M.	F.	M.	F.
Portuguese . . . . .	118	34	309	80	358	106	339	95
Italian . . . . .	35	6	86	17	90	35	96	30
Spanish . . . . .	27	8	73	23	90	41	100	35
French . . . . .	11	6	24	10	91	6	6	8
German . . . . .	5	3	6	4	17	18	12	5
Austrian . . . . .	3	1	6	2	3	4	6	3
English . . . . .	4	—	10	1	10	—	7	1
Russian . . . . .	1	—	—	2	5	2	4	—
Polish . . . . .	3	—	—	—	2	3	1	3
African . . . . .	4	15	3	18	10	7	6	3
Turkish and Syrian .	—	—	—	1	1	2	1	—
Dutch . . . . .	—	—	—	—	1	—	—	—
Danish . . . . .	—	—	2	—	2	1	—	—
Belgian . . . . .	—	—	3	3	6	1	1	—
Swiss . . . . .	—	—	—	—	2	1	—	1
Swedish . . . . .	1	—	5	—	7	3	1	—
Greek . . . . .	1	—	—	—	—	—	2	—
Roumanian . . . . .	—	—	—	—	1	—	—	—
Chinese . . . . .	2	—	1	—	2	—	—	—
North American . .	2	—	—	—	6	—	2	—
Argentinian . . . .	1	—	—	2	2	2	3	2
Uruguayan . . . . .	1	—	—	1	—	—	—	—
Paraguayan . . . .	—	—	—	—	2	1	—	—
Chili, Peru, Ecuador	—	—	1	—	1	—	2	—
Cuban . . . . .	—	—	1	—	—	—	1	—
Unknown . . . . .	253	102	139	93	38	28	3	5
	472	175	669	257	667	261	595	191



TABLE IV.—*Professions and Occupations of the General Paralytics at the National Hospital for Insane, Rio, and at Dr. Eiras' Hospital, Rio.*

Professions and occupations.	National Hospital for the Insane, Rio, 1889 to 1904.	Dr. Eiras' Hospital, Rio, 1889 to 1903.
Physician . . . . .	2	6
Apothecary . . . . .	2	—
Dentist . . . . .	—	2
Advocate . . . . .	4	3
Notary . . . . .	—	1
Engineer . . . . .	1	7
Surveyor . . . . .	1	—
Architect . . . . .	1	—
Draughtsman . . . . .	1	—
Photographer . . . . .	1	—
Mechanician . . . . .	1	—
Machinist . . . . .	3	—
Painters, etc. . . . .	7	2
Printer . . . . .	2	—
Workman . . . . .	9	—
Carpenter . . . . .	5	2
Cook . . . . .	—	2
Coachman, loader, streetworker, paver . . . . .	51	1
Stower . . . . .	2	—
Fisherman . . . . .	3	—
Boatman . . . . .	3	—
Mason . . . . .	2	—
Barber . . . . .	1	—
Tailor . . . . .	3	—
Soldier . . . . .	4	—
Army officer . . . . .	8	3
Marine officer . . . . .	—	2
Sailor . . . . .	1	—
Policeman . . . . .	2	—
Functionary . . . . .	6	14
Merchant's clerk . . . . .	9	—
Bookkeeper . . . . .	3	1
Merchant . . . . .	11	30
Capitalist . . . . .	1	3
Schoolmaster . . . . .	2	—
Clergyman . . . . .	2	1
Diplomatist . . . . .	1	1
Player . . . . .	2	—
Clown . . . . .	2	—
Farmer . . . . .	10	4
Planter . . . . .	2	1
Attendant . . . . .	1	—
Total . . . . .	172	86

(1) The Editors much regret that, owing to lack of space and to other circumstances, the publication of this article has been so long delayed.



*The Liability of the Insane to Tubercular Infection as demonstrated by an Examination of the Tuberculo-opsonic Index.* By C. J. SHAW, M.B., Ch.B., Assistant Medical Officer Perth District Asylum, Murthly. Awarded the Bronze Medal of the Medico-Psychological Association.

### *Introduction.*

DEATH-RATE statistics of persons dying in large institutions are often inexact, as their accuracy depends to a very large extent on the personal factor of their compiler. Unfortunately, the statistics of the death-rate from tubercular disease, particularly phthisis, occurring in asylums leave no room for doubt that the insane, as a class, are particularly liable to contract tubercular disease. The English Lunacy Commissioners in their report for 1902 say: "The proclivity of the insane, whether confined in asylums or not, to tubercular disease, especially pulmonary, has long been recognised." In all asylums, according to Clouston, who was amongst the first to draw attention to the fact, consumption is between three and four times more common than in the general population at the same ages.

There is, however, great difference of opinion as to whether this high tubercular death-rate is due to the fact that the insane are herded together in asylums, or whether the insane, as a class, have an abnormally low resistive power to the invasion of the tubercle bacillus. Clouston says that four-fifths of the insane dying of phthisis contract the disease after admission to asylums. Another observer has stated that not more than 7·5 *per cent.* of cases admitted into asylums are phthisical, and in 10 *per cent.* a family tendency exists. In English asylums about 15·5 *per cent.* of deaths are officially assigned to phthisis, and in at least 20 *per cent.* signs of tubercular deposit in the lungs may be traced. The average duration of residence of those dying from this cause in Scottish asylums is 3·66 years. It is therefore probable that in many cases phthisis is contracted after admission to the asylum.

Clouston further states that out of ninety-seven cases of general paralysis who died, twenty-seven were phthisical. Mickle has stated that of all the general paralytics examined

*post-mortem*, 26 *per cent.* exhibited caseation or cavities, 12 *per cent.* arrested phthisis, and 65 *per cent.* pleuritic adhesions. In the last report of the General Board of Commissioners in Lunacy for Scotland, the percentage of deaths from phthisis in all Scottish asylums is given as 14·6. The percentage of deaths due to general paralysis for the same year was 14·8. If one takes into consideration the fact that many cases of general paralysis really die of tubercular disease, although returned as dying of general paralysis, the death-rate from tubercle must be higher than that above stated.

As during recent years, with improved hygienic conditions in asylums, the death-rate from phthisis has diminished among the insane, it is possible that at one time confinement in an asylum did act as a factor in swelling the tubercular death-rate. On the other hand, it cannot be denied that many cases of phthisis admitted into asylums make most excellent recoveries, and the environments of the modern asylum do not suggest that tubercle should be an endemic disease. In this asylum, among patients drawn largely from a rural population, of the last hundred deaths, seventeen were due to tubercular disease. Quite a number of phthisical patients are admitted, however, who are ultimately discharged recovered with no apparent signs of active tubercular disease.

It is reasonable to suppose that, if the insane contract phthisis through residence in asylums, the resistive power of those who have been long resident should be considerably below that of those more recently admitted, always provided that the patients so examined show no symptoms of active tubercular disease. On the other hand, if the insane, as a class, be more liable to phthisis than the sane, their average resistive power should be below that of the sane healthy population.

The recent researches of Wright and others on the opsonic power of human blood-serum to the tubercle bacillus and other organisms have opened up a field of inquiry which, although at present little explored, has already, they contend, yielded certain results, in so far that it is now possible to calculate the resistive power of the individual, not only to tubercle but also to other organisms. As Wright found that in cases of staphylococcal and tubercular infection with an entire absence of clinical symptoms there was a diminished phagocytic power

to those organisms as compared with that of healthy individuals, and as this power could be increased by injections of the corresponding vaccine, he concluded that the lowered phagocytic power permitted infection to occur, and that the resistance to infection by any organism could be estimated by calculating the opsonic power of the blood-serum. The results of observations recorded by Bulloch and others agree with those obtained by Wright and support his conclusion.

It occurred to me that in the study of the opsonic index of the insane resident in the asylum we have a means of determining the question as to whether the insane contract tubercle as a result of residence in asylums or as a result of a lowered resistive power to infection by the tubercle bacillus. With this object in view I made observations on the opsonic index of six members of the staff, who were, so far as could be ascertained, absolutely free from tubercular disease. I also made observations on thirty cases of persons suffering from various forms of mental disease, commencing with those most recently admitted, and extending my observations to those who had resided in the asylum for so long a period as eleven years. All these cases were, at the time of observation, free from active tubercular disease, but five showed evidences of having, at some time, suffered from tubercular infection. One of them had cicatrices in the neck. Four had flattening of the chest, with diminished movement, some dulness on percussion, and increased vocal fremitus with prolonged expiration. Two of these were cases of general paralysis. During their period of residence none of the thirty cases observed had ever required medical treatment for any serious ailment.

The opsonic index of the blood-serum was determined for five consecutive days, and the average index of each case calculated for that period. In all cases the serum was compared with my own, which was taken as unity. To ascertain if any further information could be gained from the opsonic indices, I injected the control cases and the insane patients with Koch's new tuberculin T. R. Four of the control cases, and twelve of the insane persons received an injection of  $\frac{1}{500}$  mgr. T. R., while two control and eighteen cases were injected with  $\frac{1}{750}$  mgr. T. R. The opsonic indices were then observed for a further period and the results tabulated.

*Technique employed.*

Before reliable results can be obtained in estimating the opsonic power of the blood, considerable experience in the technique of the operation is necessary. I had been engaged at this work for three months before I considered my results sufficiently accurate for definite conclusions to be drawn from them. I have continuous records of many cases for so long as three weeks, but as I had records of only five consecutive observations in all cases prior to injection with tuberculin, I give the results for that period only.

The blood examined was taken at the same hour daily, and therefore as nearly as possible under the same conditions as to exercise and the digestive processes. Any change which these conditions may cause in the opsonic power of the blood, and which might lead to error in the results obtained, was thereby reduced. The blood, in all cases, was taken from the lobe of the ear, which was purified before being punctured. The first drop of blood was removed, and a sufficient quantity for the number of observations being made was drawn into a straight glass pipette with capillary ends. The pipette was not quite filled, and, to prevent heating the serum, the vacant end of the pipette was sealed in a flame. After centrifuging, the serum separated from the corpuscles. The unsealed end of the pipette was then broken off and the serum exposed. My own serum, which was the control observed in every case, was drawn from my finger. My leucocytes were also used during the observations. Blood was dropped directly from my finger, which was deeply punctured and bled freely, into a solution of 1 per cent. citrate of soda in .85 *per cent.* chloride of sodium solution. Two parts of this solution were put into a small tube set in a piece of cork, and the blood run into it, the whole being thoroughly mixed during the process. With a less dilution the blood tended to clot. This mixture was then centrifuged. The supernatant fluid was pipetted off and the corpuscles again washed with a solution of .85 *per cent.* sodium chloride. After centrifuging, this solution was drawn off with a pipette, and the corpuscles left in the tube. These were gently stirred and the leucocytes fairly distributed.

A suspension of tubercle bacilli was made in a 1 in 1000 sodium chloride solution. With a stronger solution this



organism tends to clump, and the results are then less accurate than with a more uniform suspension. The amount of tubercle powder necessary was moistened with the solution and pounded in an agate mortar. More solution was added, and when the suspension was complete the whole was filtered into a small sterilised test-tube. The suspension was renewed at very frequent intervals, though the contrast staining employed prevented any error of enumeration which might have resulted from the presence of contaminating organisms in the solution. The suspensions were made as nearly as possible of the same strength throughout, but as the same control serum was used in all cases, and the index calculated by the result obtained in the control case, no error resulted from a slight variation in the strength of the suspensions used from day to day.

Having obtained the blood-serum, leucocytes, and organismal suspension, equal quantities of these three were measured in a capillary tube, and thoroughly mixed in the cell of a hanging drop-slide. The mixture was then drawn into a capillary tube, the end of which was sealed in a flame, and the whole incubated for fifteen minutes at a temperature of  $37^{\circ}$  C. The end of the capillary tube was then snipped off, and the contents blown upon a slide. As uniform a film as possible was made, so that the leucocytes and the organisms not ingested were fairly distributed and not clumped at the edges of the film. Enumeration is prolonged by so doing, but the result obtained is more accurate, as it can at once be seen whether the organism is actually inside, or only lying on the top of the leucocyte. The slides were dried in the air and stained with Ziehl-Neelsen carbol-fuchsin stain by the usual method, decolourised with a 20 per cent. sulphuric acid solution, and counter-stained with a saturated watery solution of methylene blue.

The microscope used for enumeration was fitted with an oil-immersion lens and a movable stage. The cedar oil was applied directly to the film, no cover-glass being used. The centre of the slide was always the part examined, so that clumping of the leucocytes or organisms might not affect the results obtained.

To estimate the opsonic index the number of organisms ingested by a definite number of leucocytes was first calculated in the control film. The number so obtained was taken as representing unity for the series of observations made that day.

By the comparison of the number of tubercle bacilli ingested by the same number of leucocytes in the film of any case under observation, with the number found in the control film, the index of that case for that particular day was obtained. For example, if in the control film 80 leucocytes ingested 160 tubercle bacilli, while in the film of a case under examination 80 leucocytes only ingested 140 organisms, the tuberculo-opsonic index of that case for that observation would be .87. Only polymorphonuclear leucocytes were examined. The number of organisms ingested was enumerated in never less than fifty of these cells, and in the majority of the observations made eighty cells were examined. The same number of leucocytes was examined in each film on any one day. The same organismal suspension and my own leucocytes were used for each series of observations, the only variable factor being the blood-serum in each film, so that the relative opsonic power of each serum was ascertained. The opsonic power of the control serum was very constant, the number of organisms ingested showing little variation from day to day when the same organismal suspension was used. As the same methods of procedure were employed throughout these observations, the amount of spontaneous phagocytosis which might occur could not affect the results arrived at.

*Opsonic Indices to the Tubercle Bacillus in the Control Cases prior to Injection with Tuberculin.*

In six control cases the tuberculo-opsonic index was estimated for five consecutive days before injection. The average index obtained by these observations was 1.07, the average for each case being .98, .97, 1.32, 1.06, 1.01, 1.11, the variation therefore being between .97 and 1.32.

Urwick found the average tuberculo-opsonic index in twenty healthy persons to be 1.006, while Bulloch found the average index of eighty-four healthy persons to be .96, the variation ranging from .8 to 1.2. Lawson and Stewart obtained an average tuberculo-opsonic index of one in twenty-five healthy persons, with a variation between .9 and 1.2. In none of these records, however, is any indication given as to how often each case was examined before the average index was calculated. As I have found a considerable daily variation in the

opsonic indices of healthy persons, in my opinion a single observation cannot be relied upon to give a correct indication of the opsonic power of an individual. There is no indication given in these records either of the time when the observations were made. As it has been shown that in tubercular patients at least there is an increase in opsonic power after exercise, the observations ought to be made at the same hour daily, and as nearly as possible under the same conditions. Urwick states that there is little variation in the opsonic index of the same persons from day to day. I found a considerable variation in the indices registered in the control cases from day to day. One of them fell as low as '65 on one occasion. In cases of acute tubercular disease fluctuations in the opsonic index occur, some of the patients having indices which pass from subnormal to above normal on occasions, while others have a persistently high index. In none of the control cases examined was there any evidence of active or latent tubercular disease, but the control who showed on one occasion the low index of '65 had a tubercular family history. I found, however, that the average opsonic index of my control cases differed very little from week to week, and I have therefore based my results upon these averages. Considered in this manner the results of my observations on the control cases are very similar to those obtained by Lawson and Stewart in healthy country subjects.

*The Tuberculo-opsonic Indices obtained in the Insane Cases prior to Injection with Tuberculin.*

The thirty insane patients examined for five consecutive days gave an average index of '88. The variation was between '65 and 1'23. This result is below the indices obtained by Lawson and Stewart, as well as those recorded in the six control cases examined by myself. The daily variation in the indices of the insane patients was also greater than in the control persons, and the fluctuations were more marked, the rise and fall being abrupt.

The average indices of the five patients with evidences of old tubercular disease were 1'03, '96, '65, '84, '93, giving an average index of '88, the same as that found for all the thirty cases.

The difference between the index found in the six control cases—1·07—and that found in the insane patients examined—·88—is very striking. As the insane are admitted by all to be liable to tubercular infection this observation is strong evidence in favour of the view expressed by Wright and previously stated, that the opsonic power of the blood-serum can be used as a test of the liability to infection by particular organisms. That being so, it may be concluded that the insane, as a class, have a lowered resistive power to the tubercle bacillus as compared with the healthy sane population.

To estimate whether the length of residence in asylums has any bearing upon the liability of patients to contract tubercular infection, in the first table the patients examined are classified according to their length of residence.

TABLE I.—*Table classifying the Insane Patients according to their Length of Residence in the Asylum.*

Length of residence.	Number of cases.	Average opsonic index.
A. Under 6 months . . . . .	8	·83
B. Over 6 months and under 1 year . . . . .	5	·80
C. Over 1 year and under 2 years . . . . .	3	·89
D. Over 2 years and under 3 years . . . . .	3	·92
E. Over 3 years and under 4 years . . . . .	4	·96
F. Over 4 years and under 5 years . . . . .	4	·89
G. Over 6 years . . . . .	3	·95

This table shows that the average opsonic index of the patients in the classes A and B is lower than that found in any of the other classes whose length of residence in the asylum had been greater. That this is not due to the fact that the number of patients included in these two classes is larger than that in any of the other classes is proved by the fact that the average tuberculo-opsonic indices of all the patients of less than one year's residence is ·82, while the average index for all the seventeen patients of longer residence is ·92. Length of residence in an asylum is therefore not a factor which of itself tends to lower the resistive power of the insane to tubercular infection but rather the reverse, as those patients who had resided for over one year in the asylum had an average



opsonic index of '92 as compared with the index of '82 in those of under one year's residence.

As the chronic insane are believed to be more prone to tubercular infection than the acute cases, the second table is drawn up so as to classify the patients according to their mental state.

TABLE II.—*Table classifying the Insane Patients according to their Mental State.*

	Number of cases.	Average opsonic index.
A. Cases with acute mental symptoms . . .	7	'87
B. Cases with subacute mental symptoms . . .	8	'86
C. Chronic cases (secondary dementia). . .	11	'93
D. Cases of general paralysis . . . . .	4	'79

This table seems to me to point to the fact that the acutely insane have a much lower resistive power to tubercle than the chronic demented cases, and it is quite possible that these become infected with tubercular disease during the period of onset of the mental disease.

The acute cases were all recent admissions except one—a case of mania who had been resident for more than three years, but whose opsonic index was '95. With three exceptions these patients were adults. In all the demented cases the illness had commenced during adolescence.

All the general paralytic cases had been resident in the asylum for less than one year. Two of them showed evidences of having at some time suffered from tubercular disease, but I could detect no symptoms of active disease at the time these observations were made. The average opsonic index of the remaining two cases was very low, being only '78. General paralytics are as a class very liable to tubercular infection, and the low tuberculo-opsonic indices recorded in these four cases indicate that their liability to tubercular infection is due to their low resistive power.

Certain forms of mental disease are supposed to predispose

the patient to tubercular infection, and the type of mental disease which is believed to be most frequently associated with tubercular infection is adolescent insanity. The three most common forms of insanity met with in adolescent subjects are acute mania, katatonia and hebephrenia.

Table III classifies the acute cases according to their form of mental disease.

TABLE III.—*Table classifying the Insane Patients with Acute Mental Symptoms according to their Form of Mental Disease.*

Form of mental disease.	Number of cases.	Average tuberculo-opsonic index.
A. Adolescent insanity	3 cases (katatonia 1, hebephrenia 2)	·84
B. Melancholia . . .	2 cases (adults)	·88
C. Mania . . . . .	" "	·91

The table shows that the tuberculo-opsonic index of the acutely insane adolescent patients is lower than that of the acutely insane adults. It is interesting to compare this index in the acutely insane adolescent cases with that obtained in the eleven chronic cases, in all of whom the mental disease had originated during adolescence. These eleven cases, in spite of their state of dementia, and in spite of their long residence in the asylum, had a tuberculo-opsonic index averaging '93. Such a finding does not suggest that a lengthened asylum residence predisposes to tubercular infection, but it points to the fact that the resistive power to tubercle is lowered by the onset of mental disease. It is also an interesting fact that the tuberculo-opsonic index in the melancholic cases is only '88 as against '91 in the two cases of acute mania, as it is an undeniable fact that adults suffering from maniacal excitement are much less prone to contract tubercular infection than adults suffering from melancholia.

*Observations on the Control Cases after Injection with Tuberculin.*

To estimate still further if there was any difference between the sane and insane persons in their reaction to tubercle, I

injected the six control cases, all members of the asylum staff, with Koch's new tuberculin, which will be subsequently referred to in this paper as T.R. So far the only record of such injections in healthy persons is that recorded by Lawson and Stewart, who injected four control cases; the dose of T.R. which they employed is not stated.

It is now generally believed that if a person be infected by any of the pathogenic organisms, an injection of a vaccine of the infecting organism is followed by an immediate fall in the opsonic power of the blood-serum of the person so injected. The amount and duration of this fall, commonly spoken of as the negative phase, depends, according to Wright, on the amount of the dose of vaccine administered, and if the dose injected be large enough a temperature reaction and constitutional symptoms may be produced. The negative phase is followed by a positive phase, as it is called, when the opsonic power of the blood-serum is increased. This positive phase may last a variable time, but ultimately the opsonic power falls back to the level at which it stood prior to injection.

In estimating the effect of the use of any drug or vaccine, it is always necessary to take into consideration the idiosyncrasy of the individual to the particular drug or vaccine used. With a vaccine injection the idiosyncrasy of the person injected may be taken to represent the liability to infection by that particular organism from which the vaccine is made.

So far no exact definition of the term "negative phase" has been made. After months of careful work and by noting the differences found in the opsonic power of the blood-serum of healthy persons to various organisms upon several successive days, I do not consider that a reliable idea of the amount of fall in the phagocytic power produced by the injection of a vaccine can be obtained by a single observation of the opsonic power made before injection, even though daily observations are made thereafter. In many instances I found, especially in the insane cases, that a slight rise of the opsonic power occurred within eighteen hours after the injection of the vaccine, which was followed by a very pronounced fall. I therefore define a negative phase as: "Any fall in the opsonic index to a particular organism occurring at any time within forty-eight hours after the injection of the vaccine made from that organism, the index being below the level noted at the time

of injection, and also below the level of the average opsonic index for at least five days preceding the injection." Any fall, however slight, occurring within forty-eight hours and falling below the two levels stated is described as a negative phase in the following observations :

*The Opsonic Indices of the Control Cases after Injection with T.R.*

Four of the control cases were injected with  $\frac{1}{500}$  mgr. T.R. Two of them gave a distinct negative phase. The fall in the opsonic power was immediate, and lasted in the one case two, and in the other three days, reaching '59 and '63 respectively. The subsequent rise was rapid, reaching 1'57 in the one and 1'74 in the other, on the sixth day after injection. The average index of one of these cases prior to injection was '98 and of the other 1'32. In the remaining two control cases injected with  $\frac{1}{500}$  mgr. T. R. no negative phase followed injection.

In the healthy persons injected by Lawson and Stewart no negative phase occurred. As the results I obtained did not agree with the observations recorded by Lawson and Stewart I concluded that the dose of T. R. which I had used was too large. The remaining two control persons were, therefore, injected with  $\frac{1}{750}$  mgr. T.R., and with this dose no negative phase occurred. The rise in the tuberculo-opsonic power occurring after injection in these two controls was immediate, the maximum being reached the day following injection. The average index of these two control cases prior to injection was high, being 1'01 and 1'11, and they rose to 1'25 and 1'38 respectively.

As all the control persons were in good health and free from tubercular infection it is probable that the large dose of T.R. used in the first four cases accounts for the occurrence of the two negative phases recorded. It is necessary, however, to state that one of the two control cases who presented a negative phase after injection had a tubercular family history. No rise of temperature or constitutional symptoms occurred as the result of injection in any of the cases.



*The Opsonic Indices of the Insane Patients after Injection with T.R.*

Twelve of the insane patients received an injection of  $\frac{1}{500}$  mgr. T.R. Eleven of them, or 91 *per cent.*, gave a negative phase after injection. Four of the patients who gave a negative phase had, in the first instance, a slight rise in the tuberculo-opsonic index. This initial rise was followed by a decided fall which was complete in all the cases on the third day after injection. In the insane patients who gave a negative reaction it was noticed that the fall in the tuberculo-opsonic index was gradual and prolonged when compared with the same fall in the two control cases who gave a negative reaction, and in whom the fall in the curve of the tuberculo-opsonic index was abrupt. The onset of the positive phase in the insane patients was gradual and prolonged, the majority taking longer to attain their maximum than the two control cases who showed a similar reaction. The insane patients also at the height of their positive phases failed to reach such a high level of tuberculo-opsonic power as the two control cases who showed a negative reaction. In other words the positive reaction to the injection was much slower and less pronounced in the insane patients than in the control cases.

In two of the insane patients who presented signs of old tubercular disease, the negative reaction after injection was much less marked than in some of the other insane patients who presented no signs of old tuberculosis.

On comparing the results of the injection of tuberculin upon the opsonic indices of the acutely insane and chronic cases, I find that in the acute cases the negative phase produced was more marked than in the chronic cases and that the succeeding positive phase was more prolonged. The three most chronic cases who were injected with  $\frac{1}{500}$  mgr. T.R. showed a much less marked and prolonged reaction than the acutely insane.

These observations would seem to indicate that the resistive power of the patients suffering from acute mental disease was less than that of the more chronic cases who had to some extent recovered their power of resisting tubercular infection, but in whom the mental disease had left irreparable brain damage. The views recently advanced, that many of the acute forms of insanity owe their cause to bacterial toxins may

explain this difference in reactive power, if it can be proved that a severe organismal infection by one organism lowers the resistive power of the human body to other organisms. If this should be so then the acutely insane have their resistive power so reduced as to render them liable to any form of infection, while the chronic cases, who have recovered from the acute toxæmia, although left with damaged brain cells, have, to some extent, regained their general resistive power; at all events this seems to apply to tubercular infection.

It may also be further deduced from these observations that prolonged residence in an asylum does not predispose the patient to tubercular infection, as the acutely insane, all of whom, with one exception, had been resident for periods under one year, showed a deficient reactive power when compared with the chronic cases, many of whom had been many years resident. This conclusion is also supported by comparing the opsonic indices of the insane patients as shown in Table I where, as has already been pointed out, the more recently admitted cases, who were also the acutely insane, had a lower tuberculo-opsonic index than the patients who had been longer resident, and were, therefore, chronic cases of mental disease.

That so large a proportion as 91 *per cent.* of the insane cases should show a negative phase after injection with  $\frac{1}{500}$  mgr. T.R. as against 50 *per cent.* in the control cases seems to indicate that the resistive power of the insane to tubercular infection is less than that of sane persons. That such a large proportion of both the sane and insane should give a negative phase after injection is probably due to the fact that  $\frac{1}{500}$  mgr. T.R. is too large a dose. In none of the twelve patients injected with this dose, however, were any constitutional symptoms produced.

Eighteen insane patients were injected with  $\frac{1}{750}$  mgr. T.R. Of these only four showed a negative phase—that is to say, 22·2 *per cent.*, as compared with 91 *per cent.* of those injected with  $\frac{1}{500}$  mgr. T.R. Only one of these four patients showed evidences of old tubercular disease, and this was a case of general paralysis. The average tuberculo-opsonic indices of these four cases for the five days prior to injection did not lead one to expect that a negative phase would follow injection. One of them had an index of 1·07, and the average for the four cases was '99.

In the remaining fourteen cases of this series in whom no

negative phase supervened, the maximum rise of the positive phase was reached much more slowly than in the two control cases injected with the same dose. In only two of these cases was there an immediate rise in the tuberculo-opsonic index on the day following injection, while in the majority of the cases four days were required to reach that point.

All the patients injected with  $\frac{1}{750}$  mgr. T.R., with the exception of four who suffered from general paralysis, were subacute or chronic cases, and, with only two exceptions, they had been resident for more than two years in the asylum.

The difference between the reaction in the two control cases and the four insane patients injected with  $\frac{1}{750}$  mgr. T.R. who showed no negative phase was the slow reaction of the insane after injection. Both the control cases reached their maximum on the day following the injection, while the insane patients took an average of four days to reach the same positive maximum. There was, however, no difference in the maximum positive level ultimately reached in both the control and insane patients.

The result obtained in these two control cases corresponds with that recorded by Lawson and Stewart in the four healthy persons they examined.

Wright has stated "that the result of his observations seem to suggest that the development of a negative phase following a dose of T.R., smaller than that which would produce this result in a healthy person, may prove to be an index of tubercular infection. Such a conclusion would be in harmony with our experience in connection with the therapeutic inoculation of T.R. vaccine (new tuberculin). We find in this connection that the negative phase supervenes upon a very much smaller dose, and persists much longer in the case where the patient is the subject of extensive infection than in the contrary case." As the result of the observation made by Lawson and Stewart upon the four healthy persons whom they injected with tuberculin, they state: "The appearance of a negative phase after inoculation with a small quantity of tuberculin (T.R.) should enable one to distinguish between the blood of a subject of tubercular invasion and that of a person in sound health." Of the six control cases whom I injected with tuberculin, two, as previously stated, gave a negative reaction. Both these control cases, as well as the eleven of the non-tubercular insane patients

who also gave a negative reaction, were injected with  $\frac{1}{500}$  mgr. T.R. I therefore conclude that this dose is too large for diagnostic purposes. The results obtained with an injection of  $\frac{1}{750}$  mgr. T.R. were very different. Neither of the control cases so injected showed a fall in the tuberculo-opsonic power, while of the eighteen insane patients similarly injected only four, or 22.2 per cent. presented a negative phase. Of these four, one presented signs of former tubercular disease. The other three presented no signs or symptoms of tubercular infection, but the evidences of early tubercular disease are admittedly difficult to detect in the insane.

The tuberculo-opsonic indices prior to injection in these four patients, who showed a negative phase, were much more irregular than the tuberculo-opsonic indices in the fourteen cases who gave no negative reaction. The same fact was noted in the tuberculo-opsonic indices of the control cases and insane patients injected with  $\frac{1}{500}$  mgr. T.R. In those who gave no negative phase the tuberculo-opsonic indices prior to injection were very regular, showing little variation from day to day, while the tuberculo-opsonic indices of those who gave a negative phase showed considerable daily variation.

Wright has shown that a fresh injection of tuberculin given during the negative phase, induced by a previous injection, produces a cumulative effect, that is to say, it still further emphasises the negative phase. It is, therefore, possible that in those who are already infected with tubercle an injection given when the tuberculo-opsonic index was much below or much above the healthy average might produce very different results. In the control persons and the insane patients upon whom I made these observations, however, I could detect no connection between the level of the tuberculo-opsonic index on the day of injection and the subsequent presence or absence of a negative phase. It is, therefore, probable that the amount of tuberculin administered has a more important bearing on the production of a negative phase after injection in non-tubercular persons than the level of the tuberculo-opsonic index at the time of injection, and, as I have already pointed out, the amount of variation in the tuberculo-opsonic index prior to injection has also to be considered in estimating the occurrence or absence of a negative phase after inoculation.



*Summary and Conclusions.*

(1) That the average tuberculo-opsonic index in persons free from tubercular disease varied between '97 and 1'32.

(2) That the tuberculo-opsonic index of persons free from tubercular disease varied considerably from day to day, but that the weekly average of the tuberculo-opsonic index in the same persons varied very little from week to week.

(3) That the average tuberculo-opsonic index of thirty insane persons, all free from symptoms of active tubercular disease, was '88, the variation being between '65 and 1'23.

(4) That the daily variation in the tuberculo-opsonic indices of insane persons is much greater than in healthy persons.

(5) The results of these observations lead me to conclude that the insane, as a class, are more liable to tubercular infection than the healthy sane population.

(6) That the tuberculo-opsonic indices of the insane, classified according to their length of residence in the asylum, is '92 in those patients who had been in residence for more than one year, as against '82 in those who had been in residence under a year. From this I conclude that asylum residence does not predispose the insane to tubercular infection.

(7) That the tuberculo-opsonic indices of the insane, classified according to their mental state, *viz.*, acute, sub-acute, and chronic, indicate most clearly that the acutely insane with an average index of '87 are more liable to tubercular infection than the chronic cases who had an average index of '93.

(8) That the low tuberculo-opsonic index of cases of general paralysis, namely, '79, explains the frequent occurrence of tubercular disease in this class of patient.

(9) That the tuberculo-opsonic index of the acutely insane patients, classified according to the form of their mental disease, is lower in cases of adolescent insanity than in adult cases suffering from mania and melancholia. The tuberculo-opsonic index of the adolescent cases was '84 as against '89 in the adult cases.

(10) That the tuberculo-opsonic index of cases of melancholia in adults is '88, as against an index of '91 in adults suffering from mania.

(11) As the result of Observations 9 and 10, I conclude that the acutely insane adolescent is more prone to contract tuber-

cular disease than the acutely insane adult, and that adults suffering from melancholia are more liable to tubercular infection than adults suffering from mania.

(12) That an injection of  $\frac{1}{500}$  mgr. T.R. in healthy, sane persons produced a negative reaction in two out of four cases. As I have no reason to suppose that these two controls who gave a negative reaction were tubercular, I believe  $\frac{1}{500}$  mgr. T.R. is too large a dose to use for diagnostic purposes.

(13) That out of twelve insane persons injected with  $\frac{1}{500}$  mgr. T.R., eleven showed a negative phase, from which I conclude that the insane, as a class, have a low resistive power to the tubercle bacillus.

(14) That the reaction after injection in the non-tubercular insane persons, who showed a negative phase, was more prolonged than in the healthy, sane persons who gave a similar reaction.

(15) That the negative phase induced by the injection of  $\frac{1}{500}$  mgr. T.R. in the acutely insane cases was more marked than in the chronic cases, and that the succeeding positive phase was more delayed. From this observation I conclude that the acutely insane have a lower resistive power to tubercular infection than the chronic cases.

(16) That so large a proportion as 91 *per cent.* of the insane patients gave a negative reaction after injection with  $\frac{1}{500}$  mgr. T.R. is probably due to the dose being too large for diagnostic purposes.

(17) That out of eighteen insane patients injected with  $\frac{1}{750}$  mgr. T.R. only four, or 22.2 *per cent.*, gave a negative reaction.

(18) That the remaining fourteen cases in this series injected with  $\frac{1}{750}$  mgr. T.R., although they showed no negative reaction, reacted much more slowly than the two control cases injected with the same dose.

(19) That although an injection of  $\frac{1}{750}$  mgr. T.R. is probably a sufficiently small dose for diagnostic purposes in the healthy sane population, it is still too large a dose for diagnostic purposes in insane persons.

(20) That in estimating the occurrence or absence of a negative phase after injection with T.R. it is necessary to take into consideration the variations in the tuberculo-opsonic indices for at least five days prior to injection.

(21) That in both the sane and the insane persons who gave

a negative phase after injection it was noted that the tuberculo-opsonic indices, prior to injection, show greater daily variation than in those who gave no negative phase.

(22) That I could discover no connection between the level of the tuberculo-opsonic index on the day of injection and the subsequent presence or absence of a negative phase.

#### BIBLIOGRAPHY.

(1) Bulloch, "On the Nature and Action of the Opsonic Substances in the Blood-serum," *London Hospital Gazette*, March, 1905.

(2) Bulloch, "On the Variations of the Opsonic Power in Health and Disease," *ibid.*, March, 1905.

(3) Bulloch, "Inquiry into the Opsonic Content of the Blood-serum in Healthy Individuals and in Patients affected by Lupus," *Path. Soc. Trans.*, vol. lvi, 1905.

(4) Bulloch, "The Principles Underlying the Treatment of Bacterial Diseases by the Inoculation of Corresponding Vaccines," *Practitioner*, November, 1905.

(5) Bulloch, "The Treatment of Tuberculosis by Tuberculin," *Lancet*, December 2nd, 1905.

(6) Bulloch and Aitken, "Experiments on the Nature of the Opsonic Action of the Blood-serum," *Proc. Roy. Soc.*, 1905, vol. lxx.

(7) Clouston, *Ninety-first Annual Report of the Royal Edinburgh Asylum for the Insane*, 1904.

(8) Clouston, *The Neuroses of Development*.

(9) Clouston, *Mental Diseases*.

(10) Clouston, *Journ. of Ment. Sci.*, 1863.

(11) Crookshank, "Phthisis Pulmonalis in Asylums," *ibid.*, October, 1899.

(12) Drapes, "Phthisis and Insanity," *ibid.*, October, 1901.

(13) France, "Abstract of a Paper on the Necessity for Isolating the Phthisical Insane," *ibid.*, January, 1900.

(14) *General Board of Commissioners in Lunacy for Scotland, Forty-ninth Annual Report*, 1904.

(15) Green, "Notes on the Incidence of Tuberculosis in Asylums," *Journ. of Ment. Sci.*, January, 1906.

(16) Jones, "Prognosis in Mental Diseases," *Brit. Med. Journ.*, December 16th, 1905.

(17) Kraepelin, *Lectures on Clinical Psychiatry*.

(18) Lawson and Stewart, "A Study of some Points in Relation to the Administration of Tuberculin (T. R.) controlled by Observation of the Opsonic Index in Pulmonary Tuberculosis," *Lancet*, December 9th, 1905.

(19) Macpherson, *Mental Affections*.

(20) Meakin and Wheeler, "Observations on the Opsonic Index of Patients undergoing Treatment for Phthisis, with Special Reference to the Effect of Exercise," *Brit. Med. Journ.*, November 25th, 1905.

(21) Menzies, "Some Points Connected with Tuberculosis in Asylums," *Journ. of Ment. Sci.*, July, 1905.

(22) Mickle, *On General Paralysis of the Insane*.

(23) Savage, *Insanity and Allied Neuroses*.

(24) Urwick, "Observations on the Opsonic Power of People suffering from Tuberculosis," *Brit. Med. Journ.*, July 22nd, 1905.

(25) Wright, "Notes on the Treatment of Furunculosis, Sycosis and Acne by the Inoculation of a Staphylococcus Vaccine," *Lancet*, March 29th, 1902.

(26) Wright, "A Lecture on the Therapeutic Inoculation of Bacterial Vaccines and their Practical Exploitation in the Treatment of Disease," *Brit. Med. Journ.*, May 9th, 1903.

(27) Wright and Douglas, "An Experimental Investigation of the Rôle of the Blood Fluids in connection with Phagocytosis," *Proc. Roy. Soc.*, 1903, vol. lxxvii.

(28) Wright and Douglas, "Further Observations on the Rôle of the Blood Fluids in connection with Phagocytosis," *ibid.*, 1904, vol. lxxviii.

(29) Wright and Douglas, "On the Action exerted upon the Tubercle Bacillus by Human Blood Fluids, and on the Elaboration of Protective Elements in the Human Organism in response to Inoculations of a Tubercle Vaccine," *ibid.*, 1904, vol. lxxiv.

(30) Wright, "On the General Principles of the Therapeutic Inoculation of Bacterial Vaccines as applied to the Treatment of Tuberculous Infection," *Lancet*, December 2nd and 9th, 1905.

### *The Care of Children in County and Borough Asylums.*

By CHARLES H. FENNEL, M.D.Oxon., M.R.C.P., Senior Assistant Medical Officer, East Sussex County Asylum.

THE normal English child has thriven apace of recent years, as the result of a healthy popular tendency to foster his mental and physical well-being as thoroughly as may be. But there exists among the poor a race of unfortunates—happily a small one—whose interests have rarely met with adequate recognition. It consists of the imbeciles who find their way into pauper lunatic asylums—the children legally certifiable as idiots. They cannot, I admit, pay a dividend in hard cash on the money sunk in their education, and their appeal for special attention mainly rests on their helplessness. My aim is to speak briefly of the measures already taken in their interest elsewhere, and to describe in a little more detail those adopted with success at Hellingly. Lastly, I propose to discuss the



cost of our scheme, and to attempt to analyse the benefits derived therefrom.

In order to gain a rough idea of the number of children in rate-supported asylums, I have taken at random thirty of last year's annual reports. These dealt with institutions of every size, from Ipswich with 290 inmates to Prestwich with 2682. The total number of patients returned as being less than sixteen years of age was 229, giving an average for each asylum of about 8. In ten cases there were no children, and only three asylums had more than 20. Thus in most institutions the small numbers form a discouragement to any endeavour to cater specially for them, and it is to this condition that we must probably ascribe the comparative lack of initiative hitherto shown.

It results further from their sparseness that as a rule children must needs be housed in adult wards, structural causes preventing their accommodation apart. The best-behaved adults usually find their way into non-observation wards, which require only a small staff and are practically empty while their inmates are at work in kitchen, laundry, and shops. Hence the children are drafted on admission into blocks containing a lower grade of adult patient, and spend their idle days in the society of the restless senile dement, the epileptic, and the ill-assorted mixture which peoples the infirmaries. The effect is bad, both on children and on the rest. I do not suggest that the hopeless idiot of the former class can be much influenced for good or bad by any surroundings, but with the tractable and plastic child it is different. Herded with adult lunatics, children are exposed to the influence of, and rapidly acquire, almost every degrading vice. I am far from denying that nurses and attendants can everywhere be found who will unselfishly devote time and labour to the attempt to instil habits of decency and self-control into the imbecile. But such efforts are severely handicapped when the example of ineradicable faults in its elders is always before a child's eyes. Too often the personal influence of the nurse is baffled by the poisonous moral atmosphere which the patient breathes day and night. The staff of an adult ward containing two or three children cannot spare anything like adequate time for the special benefit of the latter.

Again, the interests of the adults concerned—often senile cases—call for consideration. I think it will be agreed that in

any block, while two or three patients show a kindly interest in the ward child the feelings of the rest are about equally divided between indifference and active dislike. Old people in asylums are often fidgety and exacting. They are apt to regard the continual presence of children as an intolerable nuisance, and to especially resent their natural instinct to play about and make a noise. Hence neither side quite gets justice. In fact, it may be said that in lunatic asylums children and adults are incompatible, and as a general rule react most unfavourably on one another.

In the interests of the asylum community, then, we must first segregate the children. Further, segregation is an almost essential preliminary to any attempt to educate them.

It is obvious that this can be most simply effected by the grouping of juveniles from various counties and boroughs in a few asylums where special attention can be given them. This can either be done by the system of boarding out under contract, or by the provision of a separate district institution for children. The latter method, as yet imperfect, claims special mention.

In February, 1905, mainly through the advocacy of a prominent alienist in Warwickshire, a definite effort was set on foot to cope with the problem as it affected the Midland counties. The plan was adopted of inviting the various lunacy authorities concerned to join in acquiring a house and land suitable for a district institution, with a view to the reception of the idiot and imbecile children from the existing Midland asylums. Unfortunately, after the project had been thoroughly discussed and many difficulties overcome, it was found impossible to carry it through. Owing to a technical difficulty in connection with the lease the Lunacy Commissioners were unable to sanction the acquisition of a building which was in other respects suitable.

The enforced abandonment of a scheme which, after long and careful ventilation had appeared distinctly auspicious, was a disappointing set-back to the interests of the defective class. That the proposed measures were soundly and practically based can hardly be doubted, and I think we may assume that future organisation will be on the same principle of combined action. It is satisfactory, however, to know that the importance of the subject was fully impressed on the lunacy authorities of the Midlands. Those responsible for the Sandwell Hall project can scarcely feel that a year's extremely arduous work was

entirely wasted when it is realised that the special care of imbeciles was at least placed on a new footing of recognition.

The alternative arrangement—that of boarding out under contract in accordance with the provisions of section 269 of the Lunacy Act, 1890—has been employed both here and at the Middlesex County Asylum, Wandsworth. At the latter institution an annexe for imbeciles, containing 100 beds, was opened in 1897, and since that year children have been received and educated from the counties of Surrey, Herts and Norfolk, and from Sunderland and Derby boroughs.

At Hellingly we have a separate block specially designed to accommodate ninety imbecile and idiot children. This fortunately allows for the inevitable steady increase in their numbers, a condition which has already caused the Middlesex asylum to exclude out-county patients. At present a certain number of beds are filled by quiet adults. Structurally the block is on the lines of the modern "acute hospital" rather than on those of the average villa. It is two-storied, the upper floor being occupied by dormitories, while the lower contains a dining gallery with side rooms, two day rooms, a room for the cripples and a schoolroom; adjoining it is a playground. The staff includes six day nurses, with one for night duty.

Systematic education was begun in April, 1905, with the engagement of a non-resident schoolmistress at an annual salary of £50, rising £2 10s. yearly, and emoluments valued at £13. The lady appointed had had no previous experience of the feeble-minded, but was well versed in kindergarten detail, and had been employed for some years at an elementary school. She has proved a most capable and energetic teacher, taking a keen interest in her work and adapting her methods skilfully to the special needs of her charges. The instruction has followed the usual lines recognised as suitable to imbeciles—cultivation of the senses and of co-ordinative power, encouragement of observation, and, finally, more or less definite manual occupations of a useful kind, such as needlework and the making of baskets and rugs. No less important is the physical culture. In order to organise this arrangements were made for the schoolmistress to pass through a course of Swedish drill at Eastbourne, and the system has been found very satisfactory in its application, slightly modified, to the children. The exercises now form a part of the regular daily routine, and

their effect on the physique and bearing of the classes has been pronounced.

With regard to expense, the outlay may be summarised as follows :

*Initial.*

Fitting up schoolroom with blackboard,			
desks, and slates . . . . .	£5	13	5
Clubs, etc., for drill . . . . .	1	10	5
	<hr/>		
	£7	3	10

*Upkeep per Year.*

Wools and other material for rug making	£	8	17	2
Cane for baskets . . . . .		5	6	0
Sundries for various other occupations .		6	6	8
Salary and emoluments of teacher .		64	5	0
	<hr/>			
	£84	14	10	

This may be regarded as the total cost of teaching the twenty-seven children on the school list, and I do not think that any economy could be effected.

I would emphasise the fact that, although the provision of a special block is in practice found to be a great convenience and benefit, there is no reason why a course of education similar to ours should not be efficiently carried out in any asylum without the need of building alterations. All that is necessary is a single room of moderate size.

The question naturally arises, what resulting advantages are to be set off against the expenditure? These may be classed under three headings :

(1) Value of goods made. This naturally depends on the market which can be secured. It may be at once admitted that but little direct return is to be expected from this source. The mentally deficient can never enter into competition on equal terms with normal labour. But their energies can be guided into certain directly profitable grooves, in so far as needlework, rug and basket making, etc., are concerned, since the institution can buy such products at the standard price. The value of goods made in the Hellingly school in twenty-



two months was £12 10s. 9d. Those who have studied the accounts of large imbecile institutions, where the sale of school products has been developed through many years, will be aware that the output of our Sussex patients is above the average in value.

We must clearly recognise that many children need careful elementary training for months and even years before they can produce work which will command any rebate.

(2) Education of the child with a view to make him eventually useful in the workshops. Here we are dealing with a more remote but a far more practical return. It has been found at Darenth that the school course with its attendant handiness, method, and self-control, has been stamped clearly on such of the adult workers as have been through it, and that the best hands in the tailor's and carpenter's shops, the most skilful laundry-women and sempstresses owe very much of their value to early training in the imbecile schools. Education in childhood discovers and develops special aptitudes in the weak-minded no less than in the normal subject.

(3) The routine of school life, as might be expected, has an important function in building up and strengthening such character as an imbecile may be capable of developing. Here, again, we attain a tangible result. The child of faulty habits, the pickle, and the potential hooligan of the refractory wards are often strikingly amenable to the discipline of the school-mistress. Companionship in work, a spirit of mild emulation, and the realization of progress combine to mould favourably a disposition not yet entirely ruined by its environment. And lastly, the infinite gratification to a child who realises that he is a responsible human being with a value of his own, instead of a contemptible loafer, may possibly be held to outweigh any other advantages which I have tried to attribute to our teaching system.

#### DISCUSSION

At the Meeting of the South-Eastern Division at Hellingly on April 17th, 1907.

The PRESIDENT (Dr. ROBERT JONES) stated that the time was long past when the teaching of the imbecile and weak-minded was looked upon as a useless occupation, for, as the reader of the paper had stated, by patient teaching of a special kind a response was elicited which enabled the persons taught to become, if not completely self-supporting, at any rate in a great measure contributory to their own support. This was generally recognised with those grades of weak-minded persons whose deficiency was "mild," and the legislature had recognised the value of such training

by giving local authorities optional powers to provide educational facilities through the Epileptic and Defectives Act of 1899 and the Blind and Deaf Act of 1903. The President related his own experience at the Earlswood Asylum, which agreed with that of Dr. Fennell, and some of those under his care had become completely self-supporting under special tuition, whereas others had ceased to be a burden upon their friends or upon the ratepayers. He had noticed the figures in the Blue-book as to the admission of those of youthful age, and noticed that there was a decided increase in insanity from this class, and unless these defectives were specially trained they tended to become the inhabitants of our workhouses, gaols, and asylums. He believed that Dr. Richard Greene, of Berry Wood, was among the first superintendents of public asylums who had segregated the defectives in county asylums from those suffering from other forms of insanity, and he asked Dr. Fennell if he could confirm this statement. The paper was an exceedingly interesting one, for it placed definite information of a practical character before the Association as to the financial results of training, and it was satisfactory to find that imbeciles so trained could by their labours help to bring down the maintenance rate of those not so employed. He was interested to learn that physical drill had been used for this class, and he asked Dr. Fennell if this adjunct to treatment had been extended to other classes of the insane, as at Claybury the assistant-matron and a nurse had attended Macpherson's Classes in Sloane Street, and their special experience of the drill had been applied with excellent results to some of the insane. He was delighted to see in the asylum—which, through the courtesy of the committee, they were privileged to visit to-day—the special accommodation for all varieties of mental disease prepared through the wise counsels of their treasurer (Dr. H. H. Newington), who was a member of the committee. It must, he thought, be a great satisfaction for him to see the specialised departments working with such good results, and it should be an encouragement for other public bodies to erect suitable places for this class, which could only deteriorate by the compulsory association with adult lunatics, whose habits and conduct were often a very bad example for imitation. He would like to ask Dr. Taylor if the children admitted as defectives were received as lunatics, or under the provisions of the Idiots Act of 1886. He felt sure there were many present who were capable from personal experience of appreciating and discussing Dr. Fennell's paper, who was cordially thanked.

Dr. H. H. NEWINGTON referred to the assistance which the Visiting Committee had received from Dr. Worthington, who kindly allowed a deputation to look over the special block at the Hants County Asylum, and who had given them many valuable hints which they had acted upon. The Visiting Committee were very pleased with the results so far attained. He directed the attention of the meeting to the special provisions which had been made should an outbreak of fire occur in the idiot block. The attendants' rooms had been so arranged as to afford an exit from the dormitories.

Dr. WORTHINGTON, in the course of a few remarks, recorded his indebtedness to Dr. Greene, of Northampton, for the idea of segregating children in a separate block.

Dr. TAYLOR said that there was another point which had not yet been mentioned in favour of the establishment of a separate block for children with the accompanying training, and it was that when parents knew that their children were going to receive instruction they were not so loth to part with them. He had noticed the difficulty there was in a county asylum of obtaining the services of suitable tradesmen, and he had hopes that the best workers among the children would gradually develop into the best tradesmen in the several shops of the asylum.

Dr. H. A. KIDD stated that several children from West Sussex had been received into the idiot block at Hellingly, and he was pleased to note the very satisfactory condition in which he found them.

Dr. FENNELL replied.

*The New Hospital at Ayr Asylum.*<sup>(1)</sup>—By C. C. EASTERBROOK, M.A., M.D., F.R.C.P.Ed., Medical Superintendent, District Asylum, Ayr, N.B.

THE main features of the hospital which has recently been added to Ayr Asylum are: (1) It is a substantial building, one-storeyed, after the cottage hospital type. (2) It has been specially designed for the accommodation of those insane patients who are more appropriately treated in a building of hospital character, and the design gives effect to certain principles which, in my opinion, should underlie the construction of a mental as distinguished from an ordinary hospital, specially the principle of facility of supervision of the patients by the staff both day and night, and the principle of the treatment of active insanity by rest in bed in the open air, isolation, and other special measures for the alleviation of mental and nervous disorders. (3) Owing to the way in which the design facilitates the work of the staff, the hospital is, for the class of patients it contains, managed with a relatively smaller staff than usual; and so, while an efficient instrument for its purpose, is distinctly economical to administrate. (4) Owing mainly to the elimination from the design of everything which was considered superfluous, and notwithstanding the fact that the cottage-hospital type of structure is relatively expensive to build, the hospital at Ayr Asylum has cost, for total construction and fittings, £100 per bed, which is considerably less than the cost per bed of asylum hospitals hitherto. Efficiency for its purpose, low cost of original construction, and permanent saving in future expenditure on upkeep and administration, seem cogent reasons at this time, when the public press is constantly harping on the cost of modern asylums and the ever-increasing burden of the lunacy of the country, for giving a description of this latest addition to Ayr Asylum. Before doing so, however, I shall describe the way in which the hospital scheme was taken up and carried through by the Ayr Lunacy District Board, as this undoubtedly had a distinct bearing on the ultimate cost to the ratepayers of Ayrshire.

*History of hospital scheme.*—The Ayr District Asylum for the rate-paid lunacy of the county of Ayr was opened in 1869 with accommodation for 230 patients—115 of each sex. During the next thirty years the asylum population doubled itself, and

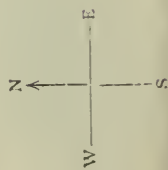
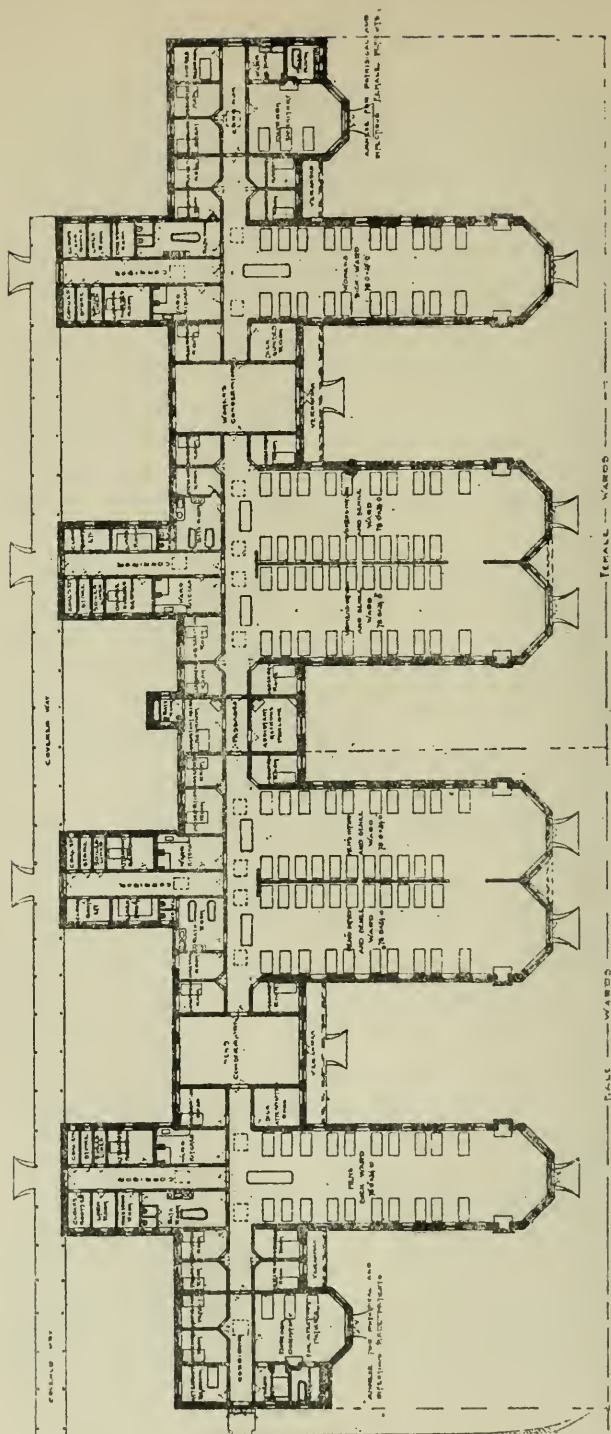
considerable additions were made to the accommodation. In 1902, when I was appointed to my present post, the population exceeded 500, and the overcrowding of the asylum had again become a pressing question. Further, owing to the large proportion of senile and debilitated patients admitted during recent years, to the increasing infirmity of many of the older residents, and to the introduction of the modern treatment of recent and curable insanity by approved hospital methods, the accommodation for patients requiring treatment in wards of hospital character was specially deficient. Several of the wards of the main asylum, which had originally been intended as day-rooms or parlours, were in use as sick wards, and this had greatly curtailed the day-room space and produced a considerable disparity between the day and the night accommodation of the institution. After considering various schemes and consulting the General Board of Lunacy for Scotland, the District Board decided that the only satisfactory way of remedying matters was to provide a properly-equipped separate hospital for the accommodation of all patients who would be more appropriately treated in such a building, the removal of these patients from the main asylum not only relieving its wards of the class of patients for which they were not suitably constructed, but also making it possible for the deficiency in day-room space to be rectified, and the proper balance between the day and night accommodation of the institution generally to be restored. Having decided on the hospital scheme, the District Board commissioned me to visit the hospitals of other Scottish asylums, so far as seemed advisable, for the garnering of ideas, and I take this further opportunity of thanking the physicians of the majority of the Scottish asylums which I visited for their kindly co-operation, courtesy, and hospitality. Having had several years' practical and intimate experience of the special requirements in hospitals for the insane, particularly at Morningside Asylum, which, with its large annual admission rate of 450 and more patients, and population of over 900 inmates, has a specially active hospital department, having thereby come to form definite ideas on the subject of the construction of a mental hospital, and having gained various hints from the experience of other physicians with whom I had compared notes, I considered at this point that it would be more satisfactory, in the long run, to make an actual plan of the



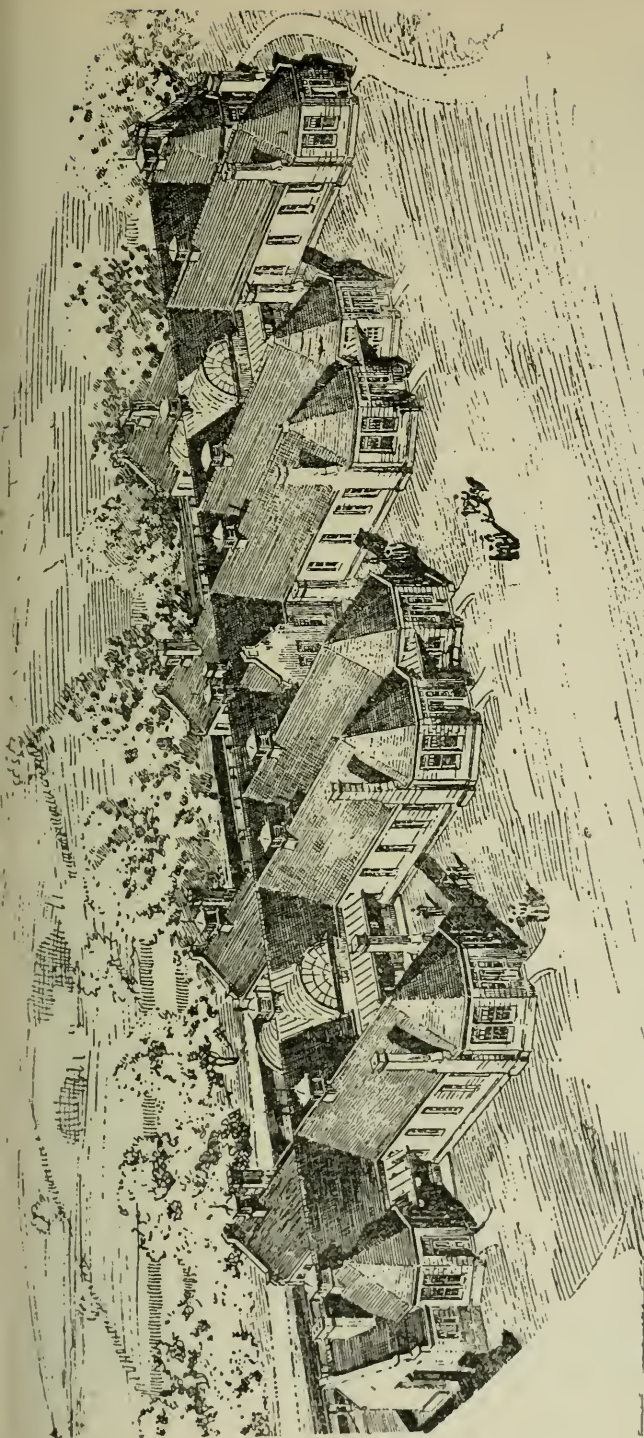
proposed new hospital at Ayr Asylum, showing not only the accommodation required, but also the most suitable arrangement of wards, observation bedrooms, verandahs, bath-rooms, and the like, than to follow the usual method of making out in writing a specification of the accommodation, and leaving its arrangement largely to the originality of competing architects, who could not be expected to realise all the details of internal disposition which would facilitate in the highest degree the working of a mental hospital, and who, further, are pardonably apt to subordinate the principle of utility to that of beauty and architectural effects. I therefore made a pen-and-ink outline drawing to scale of the ground-plan of the proposed hospital, showing the size and position of every ward, bedroom, bath-room, kitchen, and the like, and the position of doors, windows, fireplaces, baths, beds, etc., the actual drawing being reduced to simplicity by the aid of a large sheet of paper printed in one-eighth inch squares, each one-eighth of an inch being taken to represent one foot, and the walls being represented simply by lines, without allowance on the plan for their thickness. This plan was submitted to, and approved by, both the District Board and the General Board, and the District Board thereupon accepted it as the specification and plan of the accommodation of the proposed hospital, and ordered it to be lithographed, with a view to circulation among intending architects. The District Board then appointed an architect of eminence in his profession as assessor, or judge of the plans, selecting Mr. Sydney Mitchell, of Edinburgh, drew up the rules and conditions of competition—one of these being to the effect that the Board did not bind itself to necessarily adopt the plan placed first by the assessor—and by advertisement invited architects to compete for the work. To each architect who applied there were supplied a copy of the rules and conditions of competition, and a copy of the lithographed design as the specification of the accommodation and actual plan of the hospital, and it will thus be seen that the main problem of the competing architects was the treatment of the exterior of the building (which was to be in keeping with the other asylum buildings) and its disposition on the selected site, a piece of ground sloping towards the south and west. Twenty competitive plans (without distinguishing names, etc.) were sent in, and the assessor in his report to the

District Board made a short leet of five, and placed three of these first, second, and third for the three prizes awarded. The District Board then appointed the measurers for the work, and instructed them to measure the five plans on the short leet and to report thereon specially with a view to their estimated cost. After thoroughly considering these five plans and the assessor's and measurers' reports, the District Board finally selected, as all round the most suitable, economical and pleasing, the plan which had gained the third prize, namely, that of Mr. John B. Wilson, A.R.I.B.A., who was thus appointed architect of the hospital. His plans having been passed by the General Board, he prepared the various schedules for the work, advertised for contractors, and submitted the applications to the District Board, who made a selection of contractors who should receive schedules and be allowed to tender for the works, the architect being given power to add other contractors at his discretion in order to ensure competition where necessary. Owing to depression in trade at the time competition for the various contracts was keen, and the District Board with the aid of the architect in due course selected the list of contractors for the hospital, and the works were carried through in the usual way. The process of erection took eighteen months, and the hospital was finally opened and occupied in September, 1906.

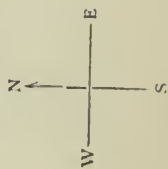
*Organisation of asylum.*—The addition of the hospital raises the accommodation of the asylum to 650 beds (for patients) distributed as follows: main asylum 368 beds, two villas 104 beds, new hospital 154 beds, and isolation hospital 24 beds. The new hospital serves as (1) reception-house and sanatorium for all newly admitted patients, (2) sick room and infirmary for all inmates of the institution who are on the sick list or are through physical infirmity more or less bedridden or helpless, and (3) sanatorium for the isolation of patients with pulmonary tubercle and other infectious diseases. The isolation hospital, which is situated near the new hospital, and so will conveniently serve in the future as an overflow hospital if necessary, is intended for use during infectious outbreaks of more serious nature or extent than can safely be dealt with in the wards of the new hospital for the isolation of infectious cases. The two villas, one for men and one for women, serve as the convalescent homes of the institution for those convalescent and better-behaved patients who are both sufficiently able-bodied and







NEW ASYLUM HOSPITAL, DISTRICT ASYLUM, NEW HOSPITAL.





sufficiently trustworthy to be given parole of the grounds by day, and not to require staff visitation by night. The main asylum serves as the asylum proper for the supervision, care, and treatment of patients who are more or less able-bodied but untrustworthy. All patients admitted to the asylum are therefore treated in the hospital to begin with, and remain there until they become suitable for the convalescent villas, or otherwise for the asylum proper, the aim being to treat all new patients amid surroundings which, so far as is possible, do not suggest the asylum environment, and are with certain modifications much the same as those of an ordinary hospital and convalescent home.

*Site and general arrangement of hospital.*—The hospital is situated on a piece of high ground to the east and north of the main asylum. It is itself sheltered from these colder quarters by a belt of wood and rising ground beyond, and it faces the south, the ground immediately in front of the building sloping gently towards the south and west, and being laid out as a garden and recreation space for the hospital patients. A reference to the accompanying sketches will show that the hospital is one-storeyed and built on the same level throughout, thus avoiding the risks of upper storeys and flights of stairs, facilitating the access from ward to ward and from the wards to the garden and grounds, and ensuring the safe removal of the inmates in the event of fire; all of these being specially desirable points in the case of a hospital for insane patients of more or less acute sick and helpless types. The building extends for a distance of 120 yards from east to west, the main wards running forwards towards the south, and having corresponding north wings which form the main entrances to these wards for every-day traffic, and are joined to one another by a north covered way open at the sides. Passing from west to east there are traversed in succession: (1) The men's annexe ward for phthisical and infectious cases, comprising a ward for three beds with kitchen and bath-room, two isolation and observation rooms, a nurse's bedroom, and a small south verandah; (2) the men's reception ward with north wing, containing twenty beds in the body of the ward, six observation rooms, kitchen and bath-room at the north end, and parlour space at the south end; (3) the men's conservatory or winter garden with large south verandah, used mainly as an

extension of the reception ward; (4) the men's infirmary ward with north wing, a large double ward with central partition, containing forty beds in the body of the ward, six observation rooms, kitchen and bath-room at the north end, and parlour space at the south end; (5) the assistant matron's quarters (parlour south, bedroom and bath-room north) at the centre of the building; (6) the women's infirmary ward with north wing, resembling the corresponding men's ward; (7) the women's conservatory or winter garden with large south verandah, used mainly as an extension of the women's reception ward; (8) the women's reception ward with north wing, resembling the corresponding men's ward; and, finally, (9) the women's annexe ward for phthisical and infectious cases with small south verandah, resembling the corresponding men's ward. It will thus be seen that the hospital is divided by the assistant matron's quarters at the centre into two symmetrical and opposite halves, each half consisting from centre to east and west of a double infirmary ward, a conservatory with large verandah, a reception ward, and an annexe ward with small verandah, and that there are 154 beds for patients—77 for each sex. All the wards are 14 feet high; in the two annexe wards there are allowed per patient for dormitory, day-room, and dining-room space 150 square feet of floor space, or 2100 cubic feet; in the four reception and infirmary wards there are allowed per patient 100 square feet of floor space or 1400 cubic feet; and each observation and isolation bedroom has an average floor space of 90 square feet and 1260 cubic feet of air space. Over and above these allowances of air space per patient, which correspond to the requirements of the General Board, it may here be mentioned that the two conservatories furnish supplementary day accommodation not included in the above figures, and that a main feature of treatment is rest in bed in the open air of the verandahs, so that the requirements of the General Board have been liberally interpreted.

#### *A. The Reception Wards.*

Each reception ward is shaped like a dagger, the body of the ward corresponding to the blade and the north wing to the haft or grip of the handle, and at their junction the kitchen and bath-room and the observation rooms opening on to short

passages on either side form the cross-piece or guard of the handle. These lateral passages lead to the conservatory on one side and the annexe ward on the other, both of which under ordinary circumstances are managed as part, and by the staff, of the reception ward.

(a) *The body of the reception ward* measures 84 feet long by 24 feet wide. The parlour space is at the south or sunny end, which has a large bay window containing at its centre a folding door opening outwards to the hospital garden and recreation ground; on each side is a fireplace, and the parlour furnishings comprise basket chairs, table, etc. The twenty beds, ten on each side, occupy the main stretch of the ward, and are arranged in pairs opposite the butts between the windows, the butts being sufficiently broad to take two beds with a chair (Austrian bentwood) between them, the beds thus not projecting beyond the interior splays of the windows and so not being in any draught from the latter. Below each window is a heating and ventilating radiator. Along the centre of the ward opposite the beds are the dining tables, which, measuring 4 feet by 3 feet, permit of the classification at meal times of those patients who are not confined to bed. At the north end of the body of the ward is a specially-constructed ward cabinet containing separate cupboards for dressings and lotions, medicines, napery for immediate use, charts, urine glasses, etc.

(b) *The kitchen, bath-room and six observation rooms of the reception ward* open off the north end of the body of the ward. *The kitchen* opens directly off the ward so that a nurse engaged therein, as at sick-room cookery, can still keep the ward under observation. The kitchen contains a small range for sick-room cookery and for warming, if necessary, the chief meals of the patients, which are cooked in the main kitchen of the asylum, and delivered in a hand-van at the north wing, into the corridor of which the kitchen also opens by another door. The kitchen has also a sink with plate-rack and drip-board (to save the work of drying dishes, etc.), a cupboard for other crockery and kitchen stores, and a kitchen table and chair. *The bath-room*, with lavatory and water-closet, also opens directly off the ward, an arrangement which is perfectly safe sanitarily with good plumber work, and has similarly the object of securing facility of supervision, so that the nurse standing at the door of the bath-room can safely observe

the occupants of the ward and the bath-room. The water-closets, basins, etc., are so placed in the bath-room that they are easily observable from the ward door, and the water-closets for privacy have doors which, to allow supervision, are raised 1 foot above the floor, and are only 4 feet high. The bath-room has one bath with free access all round (a point of importance in connection with the bathing of new patients), two basins, a slunge for slops, a steeping tank for disinfection of any bed and personal clothing before it is sent to the asylum laundry, two water-closets, a stand for urinals, hand-basins, etc., and a fixed towel-rail and mirror. The bath-room fittings (chiefly by Twyford), are the latest asylum types for the avoidance of misuse and accidents, so far as this is possible by structural devices. The bath-room has, in addition to the door opening from the ward, two other doors, one opening from an undressing room in the north wing in which newly-admitted patients discard their clothing, and the other opening into one of the observation rooms, which thus also serves the purposes of an examination-room for a new patient (with whom it is thus possible for the physician to have, at the outset, a private and confidential interview), and of a dressing room on bathing days. The six *observation and isolation rooms* open off two short passages next to the kitchen and bath-room, and have been partially detached from the body of the ward to keep the latter as quiet as possible, but, at the same time, are freely accessible to the inspections of the nurse, who thus does not require to leave her ward for the purpose, inspection being facilitated structurally by placing the door of the observation room, in most instances, across one corner of the room, so that the nurse looking through the door can see at a glance all parts of the room. One of the observation rooms, in the passage leading to the annexe ward, is an india-rubber padded-room (by Pocock Brothers, of London). The isolation rooms are also available, if not otherwise required, as private bedrooms.

(c) *The north wing of the reception ward* contains an entrance corridor, opening at one end into the body of the ward between the bath-room and kitchen, and at the other end to the north covered way outside. Opening on the two sides of this corridor are—(1) cloak and boot-room, next to the outside door; (2) coal-cellar, next to the outside door; (3) closet for pails, brushes, and floor-polish; (4) closet for soiled linen; (5) napery,



blanket, and clothing store; (6) charge nurse's bedroom; (7) ward kitchen, which also opens, as already described, by another door, directly into the body of the ward; and (8) undressing room for newly-admitted patients, which contains a weighing machine and height standard, and opens by another door into the ward bath-room, which, again, as already described, opens by two other doors, into the body of the ward, and into the nearest observation room which thus serves the extra purposes of examination room for new patients and of dressing-room on bathing days.

*B. The Conservatories or Winter Gardens and Large Verandahs.*

These form elegant and useful features of the Hospital, and are placed between the reception and infirmary wards, and were originally intended by me for the use of those patients in both wards who were able to be out of bed, but unable to go out of doors owing to stress of weather. In practice, however, owing to the systematic carrying-out of the sanatorium treatment of all newly-admitted patients by rest in bed in the open air, the conservatories and their verandahs have been utilised almost entirely by the inmates of the reception wards, and are now regarded as part of the reception wards, and any patients in the infirmary wards who it is considered would be benefited by a course of bed-treatment in the fresh air are, for the time being, removed to the reception wards. Each conservatory opens by east and west doors into the reception and infirmary ward on either side, and by a folding door into the verandah, and is a large airy apartment, containing plants and flowers and basket-chairs, and forming a pleasant convalescent room for the reception-ward patients when indoors and not confined to bed, and devoted to such purposes as sewing-room, reading-room, smoking-room, etc. The verandahs face the south, and are sheltered from the north east and west by the adjoining buildings, and their roofing projects well beyond the foot of the beds, which are arranged parallel to one another at right angles to the long axis of the verandah. A southerly gale with rain and severe wintry weather are the only conditions which prevent the use of the verandahs for the sanatorium treatment of active insanity. All newly-admitted patients, unless there is some special reason to the contrary, are taken to the

verandahs on the morning following admission, and given straight away a course of rest in bed in the fresh air, lasting for days or weeks, according to circumstances. This system, combined with isolation if necessary in certain cases, and attention to individual features in all cases, is in my experience the most satisfactory method of alleviating active insanity, is productive of good therapeutic results, is based on sound physiology and correct pathology, and effects a minimum use of hypnotics and sedatives.

### *C. The Annexe Wards and Small Verandahs.*

These form the east and west extremities of the hospital. Each is an annexe of the reception ward, and under ordinary conditions is managed as an extension of that ward, and with the same staff, but if necessary the annexe can be entirely shut off from the reception ward and worked as an independent self-contained unit with its own staff. Each annexe has an entrance corridor opening by a door at one end to the outside grounds, and by a door at the other end into the reception ward, namely into one of the passages between the observation rooms. On the north side of the annexe corridor are a nurse's bedroom next to the outside door, and two observation and isolation rooms, one of which is conveniently used as a room for a patient who is dying, and who can be quietly visited by the relatives, and removed after death by the outer door of the corridor without attracting the attention of the patients. On the south side of the annexe corridor are two doors; one opening into the annexe kitchen is close to the outside door, for the delivery of food when the annexe is used as an independent unit, and the other, leading into the ward of the annexe, is opposite the two doors of the observation and isolation rooms, so that the nurse merely has to cross the corridor to make her inspections, and can still keep the ward under observation. The ward of the annexe has a bay window facing south, and containing at its centre a folding door which opens outwards into the garden, and leads to a small sheltered verandah for the open-air treatment of patients suffering from pulmonary phthisis and other infectious diseases of suitable nature. The annexe verandahs are half the width of the conservatory verandahs, and can accommodate four beds placed side by side.

Both annexe and conservatory verandahs can be inspected from the windows of the adjoining wards. The ward of the annexe has its own bath-room (with bath, disinfecting tank, slunge, and water-closet), and kitchen (with range, sink, rack, cupboards, etc.), both opening directly off the ward to facilitate supervision, the kitchen, as before mentioned, also having a separate door to the corridor. The ward is fitted with radiators below the windows, and a fireplace between the bath-room and kitchen doors, and it contains three beds, and in addition to the usual furnishings a cabinet similar to that in the reception ward, but smaller.

#### D. *The Infirmary Wards.*

These form an original feature of the hospital. For some years past at Ayr Asylum the class of patients suitable for treatment in such wards has been, in the case of both sexes, usually twice as numerous as the class of patients in the reception wards. This would have implied the building of two infirmary wards for each sex similar in size to the reception wards—that is, four infirmary wards in all, with four north wings, four bath-rooms, four kitchens, and probably not less than sixteen observation rooms (four to each ward). But the sick and the debilitated, the paralysed and the bed-ridden, the blind and the halt, the maimed and the helpless, who form the bulk of the inmates of an asylum sick-room and infirmary, are as a class quieter and more easy to manage, and require a relatively smaller nursing staff than the newly admitted, who, as a class, are physically ill and actively excited, depressed, confused, resistive, delusional, impulsive, suicidal, homicidal, and the like, and require not only skilled nursing but also careful supervision for the avoidance of accidents. Therefore I considered that there would be at least no loss in efficiency, and yet a distinct gain in economical construction and administration, if it were possible to make one large infirmary ward for each sex. And this is what has been done. Each infirmary ward, like the reception ward, is dagger-shaped, but the blade of the dagger is twice as broad, the body of the infirmary ward measuring 84 feet long by 48 feet wide, and being partially divided into two halves by a longitudinal partition, which by its pillars supports the roof, and is pierced at its centre

by an archway through which, as well as at both ends, there is free passage between both halves of the body of the ward. The partition is 10 feet high, and is clear both of the floor and ceiling for cross ventilation ; its upper 6 feet consists of glass and wood to facilitate supervision, and its lower part consists of Fram boarding cemented to give a sense of comfort and privacy to the patients occupying the beds on either side of the partition. The body of the infirmary ward, each half of which measures 84 feet by 24 feet, is thus twice the size of the body of the reception ward. The parlour space of the ward is at the south end, which has two large bay windows, with folding doors at the centres opening to the garden, and a fireplace on each side. The forty beds occupy the main stretch of the body of the ward, being arranged ten on each side of the partition, and ten next to the outside walls in pairs opposite the butts between the windows. Radiators are placed below the windows and hot pipes below the partition. In addition to the usual furnishings there is a large cabinet similar to that in the reception ward and placed at the north end. Opening off the north end of the body of the ward are (1) the kitchen, which is similar in size and arrangements to that of the reception ward ; (2) the bath-room, which is slightly larger than that of the reception ward and contains two baths, but experience has shown that one bath would have sufficed, so many of the inmates of the infirmary ward being bedridden, and therefore requiring to be sponged and cleansed in bed ; and (3) the six observation and isolation rooms, which are a sufficient proportion for the quieter class of patients concerned. The short passages between the observation rooms on either side lead by east and west doors to the conservatories and to the corridor of the assistant matron's quarters at the centre of the hospital. Between the kitchen and bath-room is the door leading to the corridor of the north wing of the infirmary ward, which is the same size as the north wing of the reception ward, and has the same suite of rooms with the exception of an undressing room, which was unnecessary, as no patients are admitted directly to the infirmary wards from the outside community. The extra space thereby gained has been utilised for the necessarily larger napery and clothing store, and cloak and boot-room. From the description it will be seen that the infirmary ward, like the reception ward, has main doors of entrance and exit placed



north, south, east, and west. All the doors of the hospital and its various apartments, with the undernoted exceptions, have spring locks, and so when closed can only be opened by means of an official's key. The exceptions comprise the doors of all observation and isolation rooms, and the doors leading from the body of the various wards to their respective entrance corridors in the north wings and east and west annexes. These doors have dead locks. It may be added that all the large folding doors at the south ends of the wards and conservatories are kept open during the greater part of the day in suitable weather, affording pleasant views of the hospital garden and country beyond.

From the description which has been given of the plan of the hospital, it will be seen that *the essential principle aimed at in the design of every ward has been to facilitate structurally the work of the nurse*. The essential point of distinction in the nursing, care, and supervision generally of insane patients in hospital wards, as compared with ordinary patients in hospital wards, is that the supervision of the former by the nurses must be constant, ready, and vigilant. This is the only way to prevent accidents. In the case of a general hospital ward the nurse on duty can often leave her ward safely for a few minutes to go, say, to the kitchen, bath-room, napery store, etc. In the case of a mental hospital ward, however, in which there are always some untrustworthy patients, the nurse on duty can never safely leave her ward in this way, but must always remain present and watchful. The ward must, therefore, be so arranged that it is not necessary for the nurse on duty to leave it, should there be only one nurse on duty at the time, as during the night, staff meals, etc. For this reason, in every ward of the hospital the kitchen and bath-room and observation rooms have been made directly accessible from the body of the ward, the observation rooms, for the sake of the quietness of the ward, opening on to short side-passages; and in close proximity has been placed a specially constructed ward cabinet containing napery for immediate use, dressings, medicines, etc. By grouping the kitchen, bath-room, observation rooms, and cabinet at the north end of the ward—thereby appropriately freeing the sunny south end for the parlour space—and by aggregating the patients who require most attention and supervision in the beds at the north end and in the observation rooms, it is obvious that the work

of the nurse has been considerably facilitated, and that mental hospital wards constructed in the above manner can be efficiently managed by a relatively small staff.

*Administration of hospital.*—The hospital, with its 154 beds (for patients), has a day staff of eighteen, and a night staff of four, each infirmary ward having a staff of four day nurses and one night nurse, and each reception ward with the annexe and conservatory and verandahs having a staff of five day nurses and one night nurse. During the eight months the hospital has been in occupation it has been necessary on only two occasions, following the admission of an extra number of difficult female cases, to temporarily strengthen the staff of the women's reception ward by the addition of one special night nurse. Hitherto, owing to the comparatively simple nature of the cases in the annexe wards, it has not been necessary to work either of them as a self-contained unit separately from the reception ward; but if this contingency should arise the annexe ward would be shut off from the reception ward and staffed with one day nurse and one night nurse. The four ordinary night nurses make their headquarters at the north ends of the reception and infirmary wards. The day charge-nurses of these four wards have their bedrooms in the corresponding north wings, and the second charge-nurses of the two reception wards sleep in the east and west annexes. The assistant-matron's quarters are accessible from the infirmary wards, between which they are situated. The hospital wards are in telephonic communication with the main asylum buildings, namely with the medical officers' quarters and the headquarters of the two chief night officials, who pay periodic visits to the hospital.

*Male nurses v. female nurses.*—In the hospital the men's reception ward is staffed with male nurses or attendants, and the other wards by female nurses, the nursing of insane men by women being thus confined to the men's infirmary ward. In the men's infirmary ward the nurses, with the assistance of three or four helping patients, perform all the duties required of them, except the bathing of those relatively few patients who are not confined to bed, and who by a simple arrangement go for their bath on bathing days to the men's reception ward. To some extent the inmates of the men's infirmary ward are selected; that is to say, any male patient who requires hospital treatment, but is considered an unsuitable case to be nursed by

women, is sent, not to the infirmary ward, but to the reception ward; and if any patient already in the infirmary ward proves himself unsuitable for female nursing, he is sent to the reception ward; and conversely, any male patient in the reception ward who is considered a suitable case to be nursed by women is sent to the infirmary ward. The class of patient in the men's infirmary ward—the more or less quiet and harmless insane man with bodily infirmity or illness—is in my experience efficiently nursed and supervised by women. At the same time there are many insane men who require careful nursing and supervision, who cannot be suitably or safely nursed by women, owing to the intensity of their mental symptoms, for example, severe excitement, vivid hallucinations and delusions, suicidal and homicidal tendencies, etc., these being common amongst newly-admitted cases; and for this reason the men's reception ward has a staff of male nurses or attendants, and of attendants only. Given the right type of attendants with the true nursing instinct—and they exist—the work of the reception ward is performed with efficiency, propriety, and safety, and with satisfactory therapeutic results. Although the men's infirmary ward has a staff of female nurses, who are under the jurisdiction of the matron and her assistant, the head attendant keeps in touch with the patients of this ward and supervises their clothing and the furnishings of the ward. Given head officials of the right type, administrative difficulties do not arise. The assistant matron, who is a fully-trained and certificated hospital nurse, supervises the practical instruction of the nurses in the men's infirmary ward and in the women's wards, but she is careful not to derogate the authority of the charge nurses, and her duties do not extend to the men's reception ward.

*Food and cooking arrangements.*—The chief meals for the hospital are cooked in the main asylum kitchen, and, as in the case of the villas, are conveyed in closed hand-vans, being delivered at the north wings and warmed, if necessary, before serving in the ward kitchens, which are also utilised for any extra sick-room cookery. The meals for those patients not confined to bed are served at the dining tables in the wards, or for variety in the conservatories or on the garden terrace in suitable weather. The staff go for their meals to the mess-rooms in the nurses' and attendants' homes at the centre of the main asylum buildings.

*Laundry arrangements.*—All bed and personal clothing from the hospital is washed in the asylum laundry, being previously disinfected, if necessary, in the ward bath-rooms.

*Ventilation.*—The system of ventilation is mainly natural—by windows, doors, and fireplaces—but is aided by extraction fans placed in ceiling trunks and driven by electricity supplied from the asylum electric station and boiler-house. Each window has (*a*) an upper “Hopper” sash hinged below and opening inwards, where it rests on two cheeks; (*b*) two ordinary sashes moving vertically up and down so as to allow clear openings to the maximum extent of six inches above and below; (*c*) a deep lower sill-rail; and (*d*) below each window is a ventilator and radiator. The only windows of the building which have shutters are those of the observation bedrooms. These shutters consist of two vertically-moving sashes, which can be locked half way up or right up, and the upper sash is pierced for ventilation. Each observation room has its own ceiling ventilator and extraction shaft.

*Heating.*—The heating is by means of radiators in the wards and conservatories, and of horizontal pipes protected with Russian steel in the observation and isolation rooms, and is effected by hot water at low pressure on the Reck patent circulator system, the steam for heating and circulating the water being supplied from the asylum boiler-house. The special feature of this Danish system of heating is that the steam, reduced by a valve to low pressure (a pressure of three pounds to the square inch suffices as a rule in the case of the hospital) not only heats but also circulates the water in the system, thereby circulating the hot water downwards as well as upwards, and moving it through the pipes and radiators much more quickly than in the case of the ordinary low-pressure systems, with the result that there is no difficulty in keeping the wards at a temperature of 60° F. even in the depth of winter. Last winter was a specially severe one, and yet it was never necessary for the radiators, which are numerous and can each be independently regulated with a key, to be worked to their full heating capacity, and consequently no fires were required to warm the wards. The circulators and main piping of the Reck system are carried in the roof, thereby avoiding not only the considerable excavation and building necessary in the making of an underground duct, but also the presence of much unsightly piping in the wards,



the chief pipes visible being the small vertical flow and return pipes for each radiator.

*Lighting.*—The lighting is by electricity, supplied from the asylum electric station, and by means of double filament lamps, each of sixteen candle-power and two candle-power, subdued light is secured during sleeping hours.

*Protection from fire.*—As the whole hospital is on the ground level, and as each main ward has exits to the north, south, east, and west, and each annexe has exits to the south, east, and west, there is abundant provision for the safe removal of the patients in the event of fire. Each ward has its supply of fire-buckets for first aid, and an internal fire-plug; and surrounding the hospital is a 4-inch water main, with external fire-plugs at necessary points. Each ward is provided with an electric fire alarm, the button of which, when pressed, sets off the siren at the asylum fire station, and alarm gongs in the sleeping quarters of the fire brigade.

*The water supply and the sewage system* are connected to the corresponding systems of the rest of the asylum, the water being supplied by the Corporation of Ayr, and the sewage being dealt with in the asylum septic tank and filter beds.

*The materials, fittings, and furnishings* of the hospital are substantial in character, and sufficient indication of the nature of the fittings and furnishings has already been given in the foregoing description. As to the materials of construction, the roofs are slated and have red tile ridges. The walls are of white freestone outside, and of single brick inside, the stone and brick walling being separated by a 3-inch cavity. The brickwork is finished internally with Keen's cement below (6 feet), and Adamant plaster above, all internal angles and corners being rounded off to facilitate cleaning, and the painting of the walls is in duresco. The floors are in selected narrow maple, stained and polished, as are also the walls and specially constructed shutters of the observation rooms. The floors of the bath-rooms, conservatories, and corridors of the north wings and annexes are in terrazzo. The walls of the conservatories are in glazed white brick, and the lower walls of the bath-rooms and kitchens are tiled.

*Cost of hospital.*—The cost of the hospital for total construction and fittings has been £100 per bed, which is considerably less than the cost per bed of asylum hospitals hitherto.

The main explanation of this moderate cost has been the design, from which, while securing the means of efficient treatment, I eliminated everything which could be considered superfluous. Thus, in the first place, given the main kitchen of an asylum, and the means of distributing the cooked food—a system which is observed in all large hospitals and has received further development in asylums with separate villas—there is no necessity for the central kitchen seen in the majority of the hospitals of asylums. All that is required is the ward kitchen, which, in any case, is necessary in any properly equipped hospital ward. Again, there is no necessity for a central dining-room, or for special day-rooms, or special dormitories in an asylum hospital, apart from the hospital wards themselves in which insane patients have their habitat for the time being, like the inmates of ordinary hospital wards. The mental hospital ward, like the ordinary hospital ward, serves as dormitory, day-room, and dining-room for its inmates, and if the requisite space is provided in the ward for these three purposes, there is no need to double the dining, sitting, or sleeping accommodation for the identical patients within the same building. And it is not a difficult matter to combine in the form of a well-proportioned ward the allowances of dormitory, dining, and parlour space required for a given number of patients, and to arrange the ward internally with a view both to useful working and pleasing appearance. Again, the addition of a central kitchen and central dining-room, and of special day-rooms and special dormitories in the hospital of an asylum, obviously means not only extra original cost of construction, fittings, and furnishings, but also a corresponding increase of officials to look after them, and extra accommodation for these officials; and all this means a permanent burden on running expenses in the future for upkeep of fabric, fittings, and furnishings, and for board and wages of staff. For these reasons I eliminated from the design of the hospital a central kitchen and dining-room, and special day-rooms and dormitories, and decided that the hospital should consist essentially of wards, each of which, like an ordinary hospital ward, was to combine the proper dormitory, dining, and parlour space required for a given number of patients. Again, as regards the design of the hospital wards themselves, the plan of the two large double wards with central partition is not only suitable for the quieter class of insane patients who form such a large

proportion of the inmates of the sick-rooms, infirmaries, and hospitals of asylums, but has obviously effected a considerable saving as regards the original cost of construction, fittings, and furnishings, and also the future cost of upkeep and staff expenses. In confirmation of this latter point it may be mentioned that during the eight months the hospital has been in occupation, and notwithstanding a reduction of sixpence per week in the rate of board for the asylum patients during the last six months of that period, the credit balance under the maintenance account of the institution was increased by £600. The opening of a large addition to an asylum, as a rule, tells heavily at first on the maintenance account.

Other factors which have contributed to the moderate cost per bed of the hospital have been the care bestowed by the architect on the details of his schedules and the supervision of the works during erection, the introduction of the system of heating adopted, the use of the asylum branch railway for the conveyance of the heavy materials of construction, and, lastly, keen competition owing to depression of trade at the time of the placing of the contracts.

(<sup>1</sup>) Visited by the Scottish Division of the Medico-Psychological Association, on the 22nd March, 1907.

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*Recidivism regarded from the Environmental and Psychopathological Standpoints.* By J. F. SUTHERLAND, M.D., F.R.S.E., Deputy Commissioner in Lunacy for Scotland.

## PART II.

It does not require a Sherlock Holmes to distinguish the *bonâ fide* tramp with tatterdemalion, unkempt locks, gaping boots and grimed skin, from the *bonâ fide* labourer in search of work.

### *Interchange of Crimes, and of Crimes and Offences, and of Criminals and Offenders.*

WITH the view of testing to what extent an interchange took place between the perpetrators of the four major crimes I have prepared a return of 370 convicts and long-term prisoners in Scotland, convicted of (1) homicides, assaults, etc.; (2) crimes

against property *with* violence ; and (3) *without* violence ; and (4) crimes against chastity. The result, an interesting one, finds expression in the following figures :

	1. No previous conviction.	2. Convicted of homicides, assaults, etc.	3. Convicted of burglary, housebreak- ing, etc.	4. Convicted of larceny, thefts, fraud, etc.	5. Convicted of sexual crimes.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
1. Homicides, assaults, etc. . . . .	49	35	6	9	<i>Nil.</i>
2. Housebreaking, burglary, etc. . . . .	1·8	1·2	68·5	28·5	<i>Nil.</i>
3. Thefts, fraud, reset, etc. . . . .	4·5	1·5	30·6	63·4	<i>Nil.</i>
4. Sexual crimes . . . . .	53·3	33	<i>Nil.</i>	<i>Nil.</i>	13

It is strikingly noticeable how the three dominant mental factors in human composition, *vis.*, malice, acquisitiveness, and lust govern so largely the criminal problem, and the irrepressible assertiveness of acquisitiveness and avarice, as shown in columns 3 and 4, and the fact of few or none having "no previous convictions." With homicides it is the reverse ; nearly one half have had no previous convictions of any kind, and very few manifest that degree of acquisitiveness of which the criminal law takes cognizance. With crimes against chastity (sexual) more than one half had no previous convictions of any kind, 13 *per cent.* repeat, and none have shown any inclination for burglary and theft. The fact of there being such a small proportion of repeaters suggests that many may have passed into asylums. A minority of physically and mentally weak ones in short, degenerates, vary their larcenous propensities with over-indulgence in alcohol, and not infrequently do their pilfering in a confused mental state, with the result that the conception of *meum* and *tuum*, never clear, disappears, and they are taken by the sufferers or by the police *flagrante delicto*. How far they are "free agents" at any time may be a moot question. Not so, however, with the perpetrators of house-breaking, robbery, etc. After a big haul yielding plunder such as a whole year of honest labour could not give, they, like the apostles of *haute finance* who manage by stratagem to keep



outside the meshes of the criminal law, indulge the palate to excess, although in the execution of their aggressive work they are sober, cunning, and in the possession of all their faculties, more often than not very considerable. This is the type of recidivism at once most vital, noxious, and costly to the commonwealth.

These observations are called for in order, firstly, to understand and appreciate how far crimes themselves, and how far crimes and petty offences are interchangeable, and secondly, to correct a wrong impression given by those penologists who consider that alcoholic excess is closely identified with all crimes and offences, indeed, in the opinion of some of them, falling little short of direct cause and effect. This idea is not shared by the writer for the reasons already stated, and neither is it by Mr. C. E. Troup, C.B., of the Home Office. He says: "No clear connection could be traced between indictable crimes as a whole and prosecutions for drunkenness."<sup>(1)</sup>

*Prevalence and Significance of Insanity among the Authors of the different Crimes.*

Perhaps in the investigation made and now set forth the *pièce de resistance* is the conclusion now submitted that for a proper and effective study of recidivism in any of its forms the psychological and psycho-pathological method of inquiry, aided and supported by the great environmental one, is that most likely to combat the evil, and to prepare the way for more rational and remedial measures. The following table is both

Indictable crimes in England for 1903.	Apprehensions.	Percentage of each.	Number of insane before and after trial.	Percentage of insane.	Ratio of insanity to apprehensions.
A. Homicides, assaults, etc. . . . .	1656	27	54	39	1 in 30
B. Sexual crimes . . . . .	1391	23	16	11.5	1 in 87
C. { Arson . . . . .	213	35	6	4.3	1 in 35
{ Malicious injury to property . . . . .	216	35	5	3.5	1 in 43
D. Housebreaking, robbery, etc., with violence . . . . .	3734	6.58	16	11.5	1 in 233
E. Theft, reset, fraud, etc., without violence . . . . .	54,745	88.3	42	30.2	1 in 1300
	61,955	100	139	100	1 in 445

highly instructive and suggestive on this point as showing the liability to certifiable insanity, and, by implication, mental states more or less allied to the certifiable one.

It amounts to this, that of the apprehensions during the year for homicides and assaults, 1 in 30 become insane before or after trial; for sexual crimes 1 in 87; arson (fire-raising) 1 in 35; robbery, burglary, house-breaking, *with* violence, 1 in 233; and for larcenies, fraud, reset, etc., *without* violence, 1 in 1300. Calculating for crimes A, B, and C, on the number and percentage of insanity found respectively in D and E, *viz.*, 58 persons and 41·7 *per cent.*, that for homicides and assaults should be 1·5 persons and not 54, and the percentage 1·2 and not 39. Or reversing it if the insanity ratio in the former applied to the latter, the latter would not merely produce, as it does, 58 insane, but 1780, or thirty times as many! Similarly, if crimes against chastity produced insanity in the same ratio as crimes against property, it would amount to 1 *per cent.* and not 11·5 *per cent.*, and arson 1·5 *per cent.* and not 4·3 *per cent.*, or thirty times less. Thus it appears that certifiable insanity is much more frequently met with amongst those who commit crimes in which the elements of malice, passion, revenge, and lust predominate, than among those in which acquisitiveness and avarice are the governing mental factors. Among the authors of crimes of blood and violence against the person are to be found a small number of homicidal maniacs, paranoiacs, etc., both with declared and carefully concealed delusions of persecution, a larger number of a coarse, brutal type who act from motives of malice, revenge, and jealousy, and a still larger number of drunkards and intoxicated persons who do violence while in that state of exaltation and recklessness which is induced by the toxic agent. The point to be observed is that there is relatively little insanity occurring among the plundering and thieving class which presents the ugliest and most persistent phase of recidivism in any country, and yet so much of it among the perpetrators of other crimes with little recidivism resulting. It has again to be stated that among the petty thieving class there are a number of degenerate and weak-minded persons.

For Scotland the relative prevalence of insanity is indicated *infra*:

	Prisoners received.	Became insane.	Ratio of insane to commitments.	Percentage of commitments.	Percentage of insane.
A. Crimes of violence . .	1445	20	1 in 72	14	30
B. Sexual crimes . .	432	13	1 in 33	4	20
C. Malicious mischief . .	652	6	1 in 108	6.4	9
D. Housebreaking, robbery, theft, etc. . .	7670	28	1 in 274	75	41
	10199	67	1 in 152	100	100

Although in the foregoing figures prison receptions take the place of the apprehensions in the preceding English table, the percentage of insane is much the same, and the conclusions reached are almost identical; that is to say, insanity is much more rife among the authors of crimes of violence, sexual crimes, and malicious mischief than among plundering criminals.

If in Scotland insanity was only as prevalent among the authors of crimes of violence as it is among the plundering and thieving classes, then among the former, instead of 20, the number certified would be 5; and similarly among the authors of crimes against chastity it would be 1.5, and not 13.

The following table has reference to the different types of insanity, and their relative frequency among prisoners committed in Scotland in 1903 for the different crimes and offences

	Imbecility or feeble-mindedness.	Dementia.	Mania.	Delusional.	General paralysis.	Epilepsy and epileptic dementia.	Alcoholic insanity and D.T.'s.	Other forms.	Total.
(1) Crimes of blood and violence . . . . .	1	5	5	1	—	1	—	5	18
(2) Crimes and offences against chastity . . . . .	4	5	1	3	2	—	—	—	15
(3) Crimes indicative of avarice and acquisitiveness . . . . .	2	8	8	2	4	2	—	1	27
(4) Malicious mischief . . . . .	2	—	—	1	1	—	1	—	5
(5) Breach of peace, drunk and incapable and disorderly . . . . .	7	6	7	5	3	2	5	4	39
(6) Vagrancy and begging . . . . .	4	5	2	1	—	—	—	—	12
(7) Other offences . . . . .	—	1	1	1	—	—	2	—	5
Total . . . . .	20	30	24	14	10	5	8	10	121

specified in column 1. The insanities were established in bar of trial, within eight days of reception, after being eight days in prison, and on the expiry of sentences, as a rule, of brief duration. The figures convey the same meaning as those already given. The frequency of general paralysis is noticeable, being 8 *per cent.* of the whole; imbecility, 16.5 *per cent.*; mania, 20 *per cent.*; dementia, 25 *per cent.*; delusional insanity, 11 *per cent.*; and alcoholic insanity and delirium tremens, 7 *per cent.*

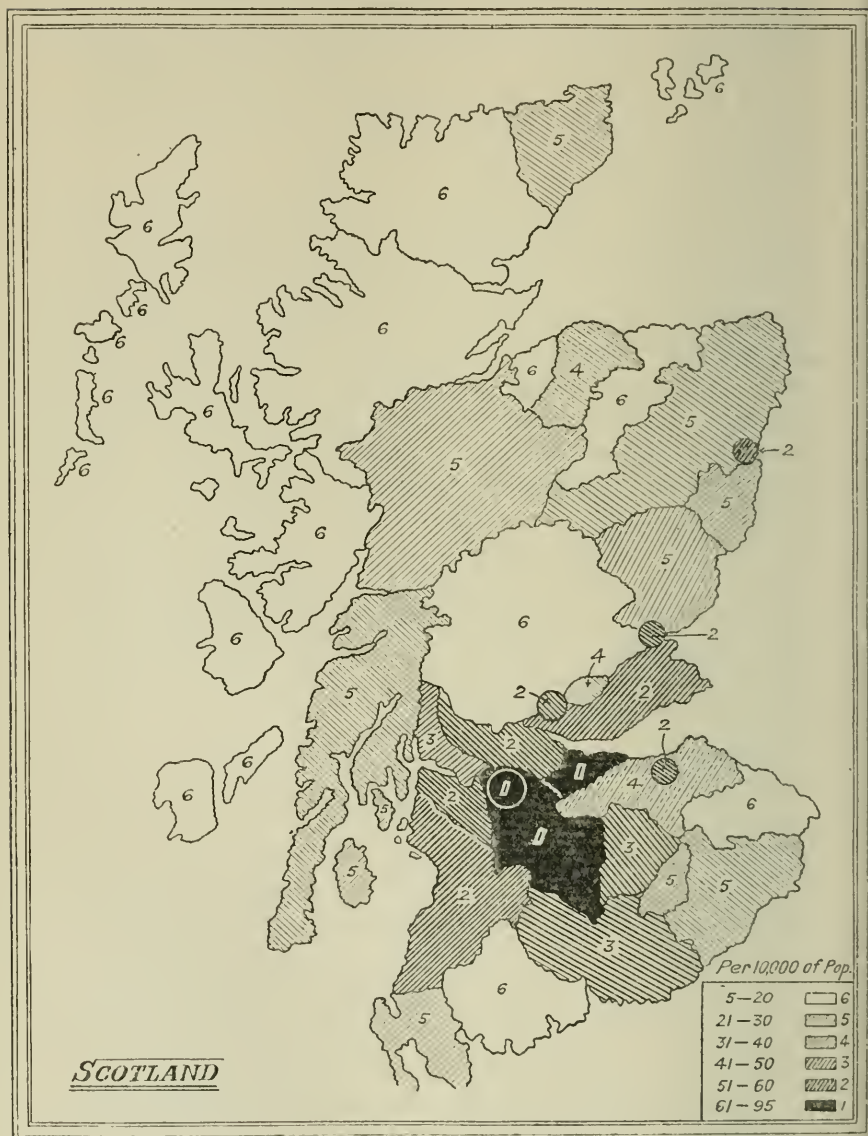
The following figures referable to the occupations of criminals and petty offenders who were known to be insane within eight days of reception, after being in prison for eight days, and on the expiry of sentences as a rule short, bear out what has been previously stated, more than one half being labourers. And this proportion is maintained, not merely for the whole, but for every one of the crimes and petty offences tabulated. The "labourer," in proportion to his numerical strength in the general population, contributes, it is safe to say, treble as many of those becoming insane as his class would justify.

	Labourers.	Handicrafts.	Miners.	Vagrants.	Housewives.	In business.	Engineers, etc.	Hawkers.	Others.	Total.
(1) Crimes of blood and violence . . . . .	6	1	1	—	1	—	—	—	1	10
(2) Crimes and offences against chastity . . . . .	6	—	1	—	—	1	1	—	1	10
(3) Crimes indicative of avarice and acquisitiveness . .	14	4	1	1	1	1	—	—	3	25
(4) Malicious mischief . . .	2	—	—	—	—	1	—	2	—	5
(5) Breach of peace and drunkenness . . . . .	19	4	3	2	4	1	1	5	3	42
(6) Vagrancy and begging . .	9	—	—	1	—	—	—	—	—	10
(7) Other offences . . . . .	3	—	1	—	1	—	—	1	1	7
Total . . . . .	59	9	7	4	7	4	2	8	9	109

### *Geographical Distribution and Loci of Recidivism.*

Without exception recidivism of every description is in the main in every country a product of urban life. It is rarely met



*Geographical Distribution of "Crime" in Scotland.*

with in rural districts. The felon who robs a country mansion is a city dweller, and the *loci* in towns and cities of the recidivist are the slum, insanitary, overcrowded, wretched abodes in which the decencies of life are known to be impossible. And under present economic conditions it is bound to increase as it is doing, in consequence of the trend of modern life which is bringing about, in every country, a depopulation of rural districts and a corresponding increase in the poorest and most squalid districts of cities and towns. Apart from the changing economic conditions and the ways of industry, there can be no question that intemperance in alcohol in any country has much to do with slum areas and the submerged tenth who are content to dwell in them and inhale their noxious moral and material atmosphere. It is safe to say that it would scarcely be possible for a saint to live in them and not be contaminated. The contagion is virulent and paralysing.

The distribution per 10,000 of population in Scotland (33 counties and 4 cities) of crimes of violence, crimes against property, malicious mischief, and sexual crimes by persons proceeded against in the Justiciary Courts and in Summary Courts is shown by the accompanying table, illustrated by the shaded map. I am not aware that the geographical distribution in Scotland of crimes has been attempted before: it has, I am aware, been done in regard to certain petty offences, such as inebriety and disorder.

It is convenient, having regard to the wide range from 4 to 95 per 10,000 which prevails, to have six shadings, the two darkest representing the chief haunts of the criminal recidivist.

I. 61 to 95 per 10,000 :

Glasgow City . . . .	95
Lanarkshire . . . .	70
Linlithgowshire . . .	78

II. 51 to 60 :

Edinburgh City . . .	60
Aberdeen City . . . .	60
Dundee City . . . .	59
Ayr . . . . .	60
Stirling . . . . .	58
Renfrew . . . . .	58
Fife . . . . .	55
Clackmannan . . . .	53

III. 41 to 50 :

Haddington . . . .	44
Dumfries . . . . .	44
Dumbarton . . . .	49
Peebles . . . . .	41

IV. 31 to 40 :

Midlothian . . . .	40
Elgin . . . . .	35
Kinross . . . . .	34

V. 21 to 30 :

Aberdeenshire . . .	26
Forfar . . . . .	21
Argyll . . . . .	24

Inverness . . . . .	27	Ross . . . . .	17
Caithness . . . . .	22	Banff . . . . .	19
Kincardine . . . . .	21	Berwick . . . . .	18
Roxburgh . . . . .	30	Kirkcudbright . . . . .	20
Selkirk . . . . .	28	Nairn . . . . .	20
Wigtown . . . . .	25	Sutherland . . . . .	5
Bute . . . . .	24	Orkney . . . . .	5
VI. 5 to 20 :		Shetland . . . . .	5
Perth . . . . .	14		

Any one in the least familiar with Scotland will be able to see at a glance that its criminality is mainly confined to the four cities and to the smallest but most populous area of the six groups, in the midlands, that embracing Lanarkshire, Linlithgowshire, Renfrew, Ayr, and Fife. There is no mistaking the position of Glasgow and Lanarkshire with its million and a quarter of population, or nearly one fourth of all Scotland. Some of the counties in Group II owe their unfortunate positions in the list to the presence of provincial towns like Greenock, Paisley, Ayr, Kilmarnock, Kirkcaldy, and Dumfermline. In Groups I and II the populations are for the most part mining and industrial. Practically north of the Forth and Clyde, save the cities of Dundee and Aberdeen, the Highlands and Islands, and North-Eastern District, comprising the fishing, crofting, and agricultural counties, the amount of crime is small, and likewise in the pastoral border counties save Dumfries, touching almost the vanishing point in the county of Sutherland, the Orkney and Shetland Isles, the Western Isles, and Outer Hebrides.

Between the "criminal" map of Scotland and the "lunacy" map<sup>(2)</sup> there is no similarity, but between it and the "inebriety"<sup>(3)</sup> one there is. It does not follow, however, for this that there is any intimate connection between the two in the areas in which both are found for reasons already adduced.

#### *International Statistics.*

The writer is not in agreement with Dr. E. Mischler, of Vienna, when he remarks that, "it may even be said that in consequence of differences of legislation, the difficulties of an international system of statistics are to a certain extent impossible"; rather he is of opinion that as the criminal laws of every country are based on Roman jurisprudence, and in the

main features alike, and as the Greek Kalends would arrive before the laws of every country could even be approximately assimilated, something should meantime be done practically by legislators and statisticians to bring about a better classification of crimes and offences and their penalties, and a better compilation and tabulation of information as to sex, age, civil condition, housing, wages, education, occupation, frequency of conviction, heredity, mental and physical condition, etc., not merely for the whole but for the various types of crime and petty delinquency. Without these details statistics are not of much use either for national or international purposes. It is surely not beyond the wit of students of psychology and criminology to devise a scheme for presentation to Ministers of Home Affairs and of Justice which would meet a felt want in the study of criminology in relation to treatment and prevention. In every country elaborate machinery for the collection of figures and enumerations exists, and may be doing its work as it understands it, and all the time it does not convey a true impression as to the real condition of affairs, because it not only proceeds on wrong lines, but for the lack of necessary collateral and qualifying information is incomplete. It goes without saying that administrators, psychologists, and statisticians having certain figures presented to them would probably interpret them in different lights and from different standpoints, although there is a common *point de vue* for the three investigators, if they know it, and could combine their knowledge. Mulhall, in his *Dictionary of Statistics*, represents some countries in a very much worse light than Great Britain as to the prevalence of the most noxious forms of recidivism. But it would be hazardous to accept and endorse this, unless the investigator, making allowance for undoubted differences in economic conditions, the laws as to land, property, liberty, education, social characteristics and habits, etc., was prepared to believe that human nature in its virtuous, as in its erring aspects, differed to the degree postulated by these figures in different countries. The factors enumerated above are not all those that have a close bearing on recidivism. The penal systems of civilised countries differ vastly, and there can be no manner of doubt that penal systems have much to do with the vitality and persistence of recidivism everywhere. If diagnosis is wrong the treatment must fail to a very large



extent because it is empirical. Could one safely judge of recidivism, which one cannot, by prison populations per 100,000 of the population, then for Great Britain and Ireland it works out at 63, France 158, Russia 155, Holland 84, Belgium 70, Italy 217, and the United States of America 132. In British prisons there is a daily population of 26,190<sup>(4)</sup>, in France 60,800, and in Italy 68,800. In the latter country, quite the reverse of this country, crimes against the person are 36.4 *per cent.*, and against property 63 *per cent.* Murders or homicides in Italy, it is stated, reach the staggering total of 3,000 per annum, and constitute a principal feature in Italian crime. In Germany out of every 1000 convicts 378 are said to be recidivists.

Recidivism is said to be increasing in France, Germany, and Italy, but no distinction is had between noxious, aggressive, and dangerous recidivists, and the passive, parasitic kind.

### *Criminal Anthropology.*

Few will be disposed to dispute the classification of criminals as a whole put forward some years ago by Lombroso, Benedikt, Havelock Ellis, and others :

*First : criminals by passion.*—Persons who act on the spur of the moment, and are known by their good lives and genuine remorse. There is no deliberation.

*Second : occasional criminals.*—Not naturally inclined to crime, but are weak and easily led. Bad heredity is prominent in this class.

*Third : habitual criminals—recidivists.*—Made up (1) of the weak and helpless, mentally and physically, and (2) those deliberately adopting a career of crime. The professional is the aristocrat among criminals, and is often skilled and intelligent.

*Fourth : instinctive criminal.*—He is the congenital or *criminel né* of the French, the *l'uomo delinquente* of the Italian school, and is decreed by nature to be such. He is regarded by Lombroso as morally insane. His type is clearly of the degenerate stock.

*Fifth : the insane criminal.*—He is, in the opinion of the Italian school, an exaggeration of the instinctive.

This, for most purposes, is a reasonable and scientific classi-

fication. The fierce disputations of past years have gathered round the "instinctive" criminal, of whose existence no psychologist or penologist is in doubt. The majority of observers contend that he is so rare as to be *une quantité négligeable*, and that is my own view, but, on the other hand, a minority of brilliant, tenacious workers hold that he is in evidence everywhere, and therefore what, in the view of the majority, applies to a very few is made by the minority to apply to the many, a fact which, if it were true, and could be substantiated, would make the costly task of regeneration and reformation a hopeless one, and would mean for the criminal himself elimination, and perpetual sequestration. It is alleged by them that more frequent abnormal conformation and asymmetry of the head estimated by irregularities, and by the cephalic and facial indices, by the weight and size of the lower jaw, prominent cheek bones, prominent and large, outstanding ears (for which the nurse is much to blame in many instances), palate, genital organs, the presence of the lemurian appendix, shortness of stature, etc., are met with.

Physical stigmata of all kinds are also found among non-criminals in all grades of society, and it has yet to be proved that in proportion these are more prevalent among habitual criminals than among the population as a whole, and especially among the classes from which criminals come. It is important to remember that physical degeneration does not necessarily entail mental degradation, and that criminality may exist without demonstrable stigmata. And further, it must not be forgotten that many people presenting several of the stigmata of physical degeneration are to be found among the honest, industrious, ethical, and religious members of society. The contention that a skilled criminal anthropologist can spot an "instinctive" after short observation was put to the test before the *savants* in a convict prison in Paris, during the year of the International Prison Congress there, and in one instance created much merriment, as well as showing the absurdity of it all. A mental specialist of great eminence, and a *citoyen* of irreproachable character donned the prison garb and fell in line with the convicts under review in the Mazas prison. He was asked to step back two paces as one of the "instinctives"? The tests proved correct in some of the cases. But this case, as well as other considerations, show, apart from the umbra it

casts over the regenerative problem engaging the attention of penologists, legislators, and social reformers, the need for a more chastened mood on the part of "cock-sure" criminal anthropologists than has hitherto been manifested. The remedy for recidivism is assuredly not here.

### *Criminal Anthropometry.*

Its application to criminality is intelligible in two aspects, as a means of identification and of revealing accurately the degree of physical degeneration to be met with among recidivists, just as the psycho-meter of the specialist, to which frequent allusion has been made in these pages, will, when called into requisition as it ought to be, reveal psychical defects, moral insensibility, perversity, and obsessions, with the accessory moral anomalies, imprudence and lack of forethought, defective intelligence congenital or supervening before adolescence. The results of an anthropometrical investigation made in the case of 370 male convicts and long-term prisoners this year is submitted along with *cartes graphiques* (<sup>5</sup>). These are conclusive as to the physical degeneracy which stature reveals when compared with the general population. On the other hand, is it so far astray from the mean of those in their own station of life and engaging in the same kind of work when at liberty? As yet this has not been determined even approximately.

The following tables, prepared by Mr. J. F. Tocher from the data supplied, give the results of the analysis of 370 criminals, 75 *per cent.* of whom were recidivists :

TABLE I.—*Stature (inches).*

Mean.				Standard deviation.			
				P.E.			
No.						P.E.	
1	.	64.64	.	.1121	2.3683	.	.0795
"	2	64.98	.	.1822	2.6745	.	.1289
"	3	65.29	.	.2038	2.2816	.	.1441
"	4	65.15	.	.4186	2.5568	.	.2958
"	5	64.84	.	.0860	2.4703	.	.0610

TABLE II.—*Head Length (mm.).*

Mean.			Standard deviation.		
		P.E.			P.E.
No. 1	. 195'32	. '302	6'3650	. '2114	
„ 2	. 197'16	. '419	6'0565	. '2918	
„ 3	. 198'42	. '631	7'0576	. '4457	
„ 4	. 195'33	. '700	4'0173	. '4648	
„ 5	. 196'27	. '226	6'4356	. '1590	

TABLE III.—*Head Breadth (mm.).*

Mean.			Standard deviation.		
		P.E.			P.E.
No. 1	. 152'90	. '223	4'6988	. '1577	
„ 2	. 153'93	. '289	4'2358	. '2041	
„ 3	. 153'51	. '432	4'8296	. '3050	
„ 4	. 152'06	. 1'064	6'4967	. '7516	
„ 5	. 153'51	. '159	4'5647	. '1127	

No. 1, burglary, robbery, and assault; No. 2, theft, fraud, reset, etc.; No. 3, murder and assaults; No. 4, offences against chastity; No. 5, total number of habitual criminals.

P.E. means "probable error"; mm. millimetres.

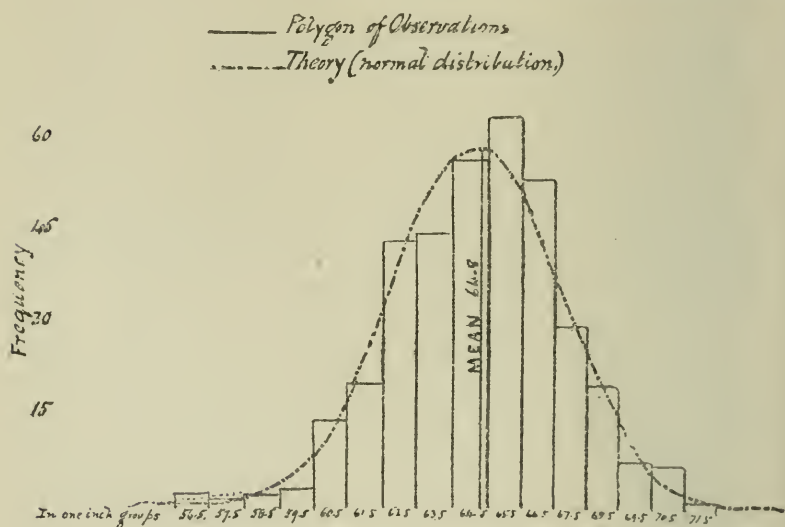
*Stature.*—There is no material difference in stature among the four classes into which the criminals have been divided. The greatest difference (64 in.) exists between Nos. 1 and 3, but this has no special significance. The average stature of the criminals as a whole (64'84 in.) is, however, significantly less than that of the lunacy population of Scotland, and is less by about 75 in. than the mean stature of English criminals. (Macdonell, *Biometrika*, vol. i, p. 192.) When compared with the general population the difference is much greater than one would expect from random sampling, and one concludes, therefore, that in stature the criminals form a special class of the population, although among themselves the differences in stature are merely random differences.

*Head-length.*—The analysis of the data for head-length shows that there is a considerable difference in this character between Class 3 (convicted of murder and assault) and the other classes. On comparing the difference between the mean of Classes 1 and 3 with its probable error, it is found to be much



greater than one would expect if it was due merely to sampling (the difference is more than four times its probable error), and one concludes that on the average the head-length of this class of 57 members is greater than Class 1 with 202 members. Class 1 (forming as it does the bulk of the criminal population) has a mean head less than that of the criminal population as a whole, while Class 2 (thieves) with a head-length of 197.15 mm. approaches Class 3 and differs from Class 1 by more than three times the probable error of the difference. One concludes that Classes 2 and 3 resemble one another in head-length and

Stature of Criminals. (in inches.)



differ markedly from the other two classes (1 and 4). On an average Classes 2 and 3 have longer heads than the bulk of the lunacy population, or of the general population of the country.

*Head-breadth.*—Just as in stature, there is no striking or material difference in head-breadth among the four classes. The differences are such as we might reasonably expect from random sampling of the criminal population. The Scottish criminal has, however, a broader head than the English criminal. The mean head-breath of the latter is 150.3 mm. (Macdonell, *Biometrika*, vol. i, p. 185) while that of the former is 153.5 mm.

(1) Conclusions. Judging from the data supplied (measurements of about 370 habitual criminals), the Scottish criminal is a much shorter man on the average than the general population. There is, however, very little difference in stature among the various classes of criminals.

(2) Those habitual criminals who have been convicted of murder and assault, and, in a lesser degree, those convicted of theft, differ considerably in head-length from those convicted of robbery and other crimes. They have, on an average, longer heads.

(3) Criminals in Scotland have broader heads than English criminals. They differ considerably in head-breadth from the general population, but among themselves there is no material difference when class is compared with class.

From invaluable data <sup>(6)</sup> provided by J. F. Tocher regarding the insane in Scotland it would appear that while the criminal's head is on the average longer and broader than the inmates of Scottish asylums, he is, as stated, somewhat shorter in stature. It is impossible, for lack of data, to compare either as to stature, head-lengths and breadths, the cephalic index, pigmentation, etc., with the general population, but it can be done with selected classes of the population thus :

	Stature (inches).	Head-length (mm.).	Breadth (mm.).	$100 \frac{B}{L}$ .
Cambridge graduates . . . . .	68.86	193.5	154.0	79.6
British Association members . . . . .	67.16	198.1	155.5	78.2
Aberdeenshire rural . . . . .	67.72	—	—	—
General hospital . . . . .	67.16	190.4	149.3	78.5
Scottish lunatic population . . . . .	65.86	195.5	151.5	77.6
English criminals . . . . .	65.54	191.7	150.4	77.2
Scottish " . . . . .	64.84	196.3	153.1	78.0

The criminal from this comparison is from three to four inches shorter in stature than the selected classes. From the anthropometrical survey made by the writer <sup>(7)</sup>, among the fringes of the Scottish population in the Hebrides—Orkney, Caithness and Shetland (including the islands of Foula, Fair Isle, Unst, Whalsay and Stroma)—there can be no doubt, speaking from general observation, that the completed analysis of the returns will show that both the insane and the criminal are much shorter than those people residing along the northern and

western littoral and in those remote islands in which the callipers and stature meter has not hitherto been applied. These islanders of Norse extraction will also reveal a stature as high as Ayrshire, the Stewartry<sup>(8)</sup>, and the West-ends of our cities, and much higher than the average for Scotland.

### *Criminal Physiognomy.*

Whatever is claimed for the existence of mental and physical shortcomings among a large number of recidivists—and there is much—the existence of a criminal physiognomy cannot be gainsaid. There is no name for that elusive yet unmistakable physiognomy which recidivists present to the observer. It is as real as the facial types met with in asylums. Coarseness, scars, expression, and look tell their own tale. They are the hall-marks of alcoholism, debauchery, ruffianism, dishonesty, lying, and unchastity, each criminal and delinquent, according to the vocation he has chosen and followed, presenting appearances which do not make it a matter of great difficulty to determine fairly correctly into which class he is to be relegated. This physiognomy being the result, and by no means an indication of the causation, of the life and conduct producing recidivism, its bearing on the subject under consideration is somewhat remote, and need not be pursued further.

A few typical cases of many illustrative of the insane, degenerate, and weak-minded prisoner are submitted in brief, but before citing them it is proper to touch here, however lightly, on the question of heredity which arises in this connection.

### *Heredity.*

There is no gainsaying the fact that, in spite of the fluctuating statistics of different asylums on the point, heredity is still the most potent causal factor in the production of insanity. The percentage set down to this cause varies little when compared with that set down to alcohol and syphilis, which, in a short space of time, varies so immensely in the returns of the same institution as at once to suggest that it all depends on the *point-de-vue*, and if there is a sudden and striking accession, say, to the number of general paralytics, there is very likely an equal diminution in the types of insanity which simulate general

paralysis. It is certain that a union of two persons, one or both of whom are neurotic, will eventuate in an insane or neurotic offspring, and that certain forms, some more than others, of insanity, in one or both parents, from which they have recovered, are very apt to recur in their offspring, or, if not, a neurosis of some kind may be looked for. How does this reasoning apply to the great bulk of professional criminals? In no way. Criminality of the most noxious kind, as a rule carried on by persons in no sense mentally unstable, feeble-minded, or obsessed, is neither a latent nor an acquired nervous lesion, and as such it cannot be reproduced by one or both parents addicted to criminal ways. The female, idle and debauched, as often as not, is the willing tool of the bold, scheming male. It is the case that a succession to criminal ways, which has been ascribed to heredity, will be found with more reason to be traceable to environment in its many contaminating and debasing aspects. It is the climax of absurdity to suppose that such criminals breed their kind, as dwarfs and giants physically breed their kind, or mentally as neurotics, epileptics, deaf-mutes, and persons suffering from certain types of insanity breed theirs. The professional criminal does not transmit acquired criminal traits. On this head it is well to hear what two so eminent authorities as Dr. George Savage and Dr. Mott have to say :

The former, in the Lumleian lectures, 1907, says : " I accept it as a fact that no mutilation of, or late acquisition by a parent will be passed on to children, but I must insist upon it that this is a very potent passing of some tendency to neurosis." This is the furthest advance made, and accepted by observers as a fair statement of the case.

Dr. Mott significantly asks : " Can a stock which is sound mentally become unsound by its members being subjected to an unfavourable environment ? Many people deny the possibility of mutation in the germ-plasm, but as the nervous system is the latest and most complex and differentiated tissue in structure and function mutations and variations may occur in consequence of favourable or unfavourable environment. The commingling of the germ-cells of two stocks of suitable or unsuitable temperaments may, by a happy or unfortunate chance, produce sporadic genius or sporadic insanity."

The part which heredity is supposed to play in the mani-



festation of criminal tendencies has, by some writers, been overstated. The heredity of psychological characteristics of one or both parents, modified by union in relation to genius, mediocrity, dulness, certain forms of insanity, epilepsy, deaf-mutism, like the heredity of physical characteristics as to size, colour, feature, etc., is admitted by the best investigators, but the heredity of acquired is not, and is otherwise satisfactorily explained. Because among thousands of genuine criminal recidivists an investigation of criminal records brings to light a few such with three or four generations traced, it would be rash to conclude that heredity in crime is proved. In many families yielding two or three felons, criminality, for several reasons of a kind adverse to the criminal and his progeny, and in spite of unfavourable surroundings, ceases to appear.

Criminal genealogical trees, as rare as the Baobabs of West Africa or the gigantic pines of California, presented in graphic style by criminological believers in heredity, with broods of three or four generations in the branches, serve a purpose, but these do not prove that burglars breed burglars, as wolves do wolves.

Whatever value there might be in the heredity contention is obscured and swamped by the environmental factor embracing, as it does, example, education, ethical and manual training, and healthy associations, etc. The absence of these sufficiently explain the rare cases of criminal continuity in criminological collections. Where, however, the heredity of mental warp and instability may be looked for and found is in the case of the congenitally weak or the psycho-pathological specimens met with about the time of puberty or later, who drift through life without a settled purpose, without the slightest regard for the dignity of honest labour, with a striking lack of moral sense and self-control, and with a great lack of proportion in their mental outlook. Not a few specimens of such are to be found among petty thieves, vagrants, prostitutes, and sexual perverts. But among those where the argument in favour of hereditary transmission looks most formidable it is sensibly influenced by the environmental factor.

No one who has had experience of the criminal and the petty delinquent classes doubts that a considerable number of the units are weak-minded, and mentally and morally defective, and obsessed in various directions. A closer scrutiny and

investigation of them, of their upbringing and habits—and this requires time, patience, and a special training to discover the weak points in their moral and psychical armour—at once reveals the truth of this. The writer, from his own experience, could give numberless illustrations of individuals whom he either had not seen, or whose names he did not, at the moment, recollect, but on glancing over the brief laconic story of crimes, convictions, and punishments recorded on their police and prison *dossiers* the conviction is forced home that mental warp, if not actual and active insanity, was sufficient to account for their occasional or frequent breaches of the moral and criminal laws. The criminal authorities are reluctant to admit special pleas in excuse for, or in extenuation of crimes. That, for some reason or other, their training it may be, is not usually their line, and to them a string of convictions conveys only one meaning, badness and incorrigibility. They are not altogether to be blamed. They do not have the necessary training or insight. For such work a few months with Legrand du Saulle in his bureau at the Paris *correctionnelle* and his successors everywhere might change their views, as a rule very pronounced. This great medical jurist, after many years' service at the police *dépôt* of Paris, declared that with a large proportion of the cases the magistrate had less to do than the physician, that, in short, their presence at the police office, the filter of first instance, the prison being the second, was due to causes with which the mere interpreter of police laws had no real concern. Into the cabinet of the medical expert there streamed, night after night, every type of physical and moral departure, the dipsomaniac, the imbecile, the epicure voluptuary, the “*tête monté*,” the “*vipère à la tête plat*,” the youth of the “*beau monde*” to whom nature had denied power of self-control, the attractive and refined female with hysterical hallucinations, etc. Many are put provisionally *en observation*, and the honour of a family, as well as of the individual, is preserved, the mental malady manifesting itself a few weeks afterwards in the asylum to which the quasi-offender was consigned. Many are sent right away to private or public asylums, without passing the portals of the gaol at all. From what I saw there many years ago I am satisfied that similar procedure is required for this country.

It is for the public and administrative bodies and individuals directly concerned with social order and good government to

evolve a penal organisation which, without confounding the gaol with the hospital, can avail itself of the moral clinique as well as the police coercion required, and thus gradually eliminate from communities those elements which are unfit for its evolution and dangerous to society.

It may be appropriate to cite here a few cases from among many known to the writer in support of the contention that the misdeeds which to a trained mind conveys the idea of weak-mindedness, imbecility, moral insanity, epilepsy, paranoia, pyromania, dipsomania, general paralysis, obsessions, requiring special treatment, to the guardians of public order, simply means incorrigibility requiring penal treatment and seclusion.

(1) A. B—, æt. 46.—Record sheet bears that he has had many charges against him for petty theft and drunken and disorderly conduct, which he makes no effort to disprove. He wears an air of nonchalance, is unconcerned and uncomplaining, is rather well-pleased with himself, and is communicative; occasionally contradicts himself; pupils unequal and speech affected. The articles stolen, and found in his possession, consist of knives, forks, spoons, not worth many pence in value. The maximum sentence is repeatedly inflicted and accepted without protest, unless it be that in the pillory contrast columns of a society journal contrasting the more lenient attitude of the Criminal Law towards those who injure property compared with those who injure the person. The bare record sets one athinking. The uncomplaining man is examined and found to be suffering from the first stage of general paralysis, and is at once relegated to an asylum.

(2) R. F—, æt. 30, has had several convictions with the maximum penalty of sixty days' imprisonment for assaults, restricted as to time (after dusk) and places (common stairs and public parks). On examination, it is found that he has the delusion that by Divine authority he has been entrusted with the duty of putting down immorality and unchastity committed in these two situations. He also goes to the asylum.

(3) F. G—, senile libidinalist and exhibitionist, with enlarged prostate and bladder difficulties. He is proclaimed a sexual pervert, and not a criminal.

(4) S. G—, female, æt. 21, betrayed and deserted by her

paramour (is seven months' *enceinte*), steals baby-linen and bedding, and is sent to gaol for theft. Examination reveals a state of hysteria and an irresistible desire created by the pregnant state similar to the instincts of birds and animals to provide for their offspring. The moral sense for the time being is affected.

(5) W. Y—, æt. 20.—Puny in size, insignificant in appearance, and presenting the stigmata of degeneration, became a constant frequenter of the theatre, and, from a prominent place, gives unstinted applause and throws bouquets at his favourite until he is removed and placed under arrest. This proved to be a case of *dementia præcox*.

(6) R. T—, a vagrant who begs his way, and who time and again receives the full penalty for sleeping out, forsooth, beside a brick-kiln. Verily, the birds of the air have their nests, and the beasts of the field their lairs, but this man, and many like him, have no place whereon to lay his head, except an out-house, the guard-bed of a police office or prison cell, or the hot-water pipe on the floor of a night shelter.<sup>(9)</sup>

(7) S. T—, male inebriate, æt. 37. Was two years in Perth State Reformatory, and after a few weeks' freedom began his career of drunkenness and brawling in a provincial town, which made him a menace to his family and the police. The cost to the community of his conduct, apart from the nuisance, he failed to see, and began to point out the defects of the reformatory in question, especially the smallness of it, seeing there were thousands of inebriates in Glasgow and Dundee requiring such treatment. There was an inability to see the enormity of his own conduct for years in his desire that others might be benefited by internment.

(8) R. F—, æt. 18, gently reared and educated at the best secondary school, sets fire to a dormitory in order to ascertain how his fellow pupils feel being roasted. In other respects his conduct was shown to be precocious and impulsive. Being a case of impulsive insanity associated with early adolescence he very properly was sent to asylum for a time.

(1) Introduction to the *Judicial Statistics for England*, 1893.—(2) British Association, Economic Section, *Transactions*, 1902.—(3) British Medical Association, Psychological Section, 1898.—(4) England 20,760, Scotland 2880, Ireland



2550.—<sup>(5)</sup> In this connection the assistance of Dr. Sinclair, Medical Officer, H.M. Prison, Barlinnie, and Dr. McWalter, Medical Officer to H.M. Convict Prison, Peterhead, is recognised with thanks.—<sup>(6)</sup> "Anthropometry of Scottish Insane," *Biometrika*, vol. v, part 3, February, 1907.—<sup>(7)</sup> Aided by the Carnegie Research Fund.—<sup>(8)</sup> The shires of Kirkcudbright and Wigton.—<sup>(9)</sup> Within living memory in Glasgow these weary wayfarers in the night shelters, there being no shake-downs, laid their chests across a taut rope which the keeper in the morning cut in order to wake them all up, as the gong does the guests at a hotel.

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*Further Bacteriological and Experimental Investigations into the Pathology of General Paralysis and Tabes Dorsalis.* By W. FORD ROBERTSON, M.D., and DOUGLAS McRAE, M.B., C.M., M.R.C.P.Edin.

In previous papers (1) we have recorded observations on the ground of which we have contended that a diphtheroid bacillus, having cultural and morphological characters resembling those of the Klebs-Löffler bacillus, plays the chief part in the production of the toxæmia of general paralysis. We have at the same time insisted upon the importance of weakening of the local and general defences against bacteria, and have attributed the chief part in the production of this impairment to syphilis, chronic alcoholic intoxication and the excessive use of nitrogenous foods. A little more than a year ago we thus summarised the case in support of the diphtheroid hypothesis:

The evidence that a diphtheroid bacillus—either an attenuated form of the Klebs-Löffler bacillus or more probably an altogether distinct micro-organism—is the specific etiological factor in general paralysis and tabes dorsalis is briefly as follows: A bacillus of this nature is, according to the results of our investigations, present in large numbers, either in the alimentary or respiratory tract, or in both, and in the genito-urinary tract, in all cases of advancing general paralysis. This bacillus has a thread form, which has been found invading the walls of the respiratory or alimentary tract in five cases of general paralysis. It can be shown that this bacillus invades the pulmonary tissues in cases of general paralysis, and that it is commonly the only micro-organism present in large numbers in the catarrhal pneumonic foci that occur in most of such cases dying in congestive attacks. A growth of a diphtheroid bacillus has now been obtained in cultures made from the brain

*post-mortem* in ten cases of general paralysis out of twenty-four in which cultures were made from this organ. Diphtheroid bacilli exhibiting metachromatic granules in Neisser preparations have been detected in the fresh blood in one case and in sections of the brain in two cases. It has been ascertained by experimental methods that these diphtheroid bacilli in contact with the living blood are rapidly taken up by the polymorphonuclear leucocytes, and that they may be completely digested in the course of two or three hours. Bodies exactly corresponding in appearance to these dissolving bacilli can be detected in the blood and cerebro-spinal fluid of the living general paralytic, especially during a congestive attack. Whilst the fact that most of the bacilli present are in process of disintegration satisfactorily explains the long succession of negative results of endeavours to obtain cultures from the blood and cerebro-spinal fluid, we have, by the use of special methods, succeeded in obtaining pure growths of a diphtheroid bacillus from the fresh blood in four cases of general paralysis, and from the cerebro-spinal fluid withdrawn by lumbar puncture in two cases. In sections of the brain prepared by special methods disintegrating diphtheroid bacilli can be recognised in the walls of the vessels and in the pia-arachnoid in many cases of general paralysis. The centrifuge deposit from the urine of the general paralytic, especially during a congestive seizure, commonly contains abundant diphtheroid bacilli that have been more or less affected by lysogenic action. In seven consecutive cases of general paralysis combined with tabes we have found the centrifuge deposit from the urine to contain, not only these altered diphtheroid bacilli, but also living ones, showing distinct metachromatic granules. In such cases a culture of the bacillus can be obtained from the urine. Experimental infection of three rats and a goat with diphtheroid bacilli, isolated from a case of general paralysis, has resulted in the production of symptoms and tissue changes resembling those of general paralysis. Lastly, there is evidence that the active polymorphonuclear leucocytes of the general paralytic have, as a rule, a greater power of dissolving these diphtheroid bacilli than that possessed by the normal leucocyte. It would therefore appear that the general paralytic has acquired against these diphtheroid bacilli a certain degree of specific immunity, by means of which he is enabled to maintain the struggle

against these bacilli, notwithstanding an otherwise defective local and general power of resistance.

These views have been opposed in this country by Eyre and Flashmann (2), Mott (3), Ferrier (4), Bulloch (4), Hamilton Marr, and several of the medical journals. On the other hand, there have not been wanting those who have recognised that the various points of evidence we have brought forward are entitled to consideration, and some have accepted the conclusions that we have drawn from them. As regards general paralysis, many of our observations have been confirmed by those of O'Brien (5) and Langdon (6) in America. O'Brien's work has been extensive, and in respect of his experimental observations he has gone ahead of us. He has isolated an organism resembling the Klebs-Löffler bacillus from 95 *per cent.* of cases of general paralysis. He has found that lower animals inoculated with the bacillus have passed through attacks similar to congestive seizures, hemiplegia, and objectively typical paresis. *Post-mortem* examination revealed conditions similar to those seen in an early case of general paralysis. He produced a bactericidal serum in the goat, and found that it had a protective action upon dogs infected with the bacillus. More recently he has treated cases with vaccines consisting of the killed cultures, using the opsonic index as a guide, and has had a considerable measure of success.

*The further observations that we have now to record concern chiefly the broth reactions and virulence of a series of diphtheroid bacilli obtained from various sources, the experimental production of general paralysis in rats, the experimental and clinical study of intracorpuseular bacteriolytic indices in relation to certain species of these diphtheroid bacilli, and also some special phenomena that bear upon the views maintained.*

In 1903, when we first advanced the diphtheroid hypothesis of the etiology of general paralysis, we provisionally regarded the organism as an attenuated form of the Klebs-Löffler bacillus, in accordance with the authoritative teaching of the time, that an organism differing from the diphtheria bacillus solely in its want of virulence must be regarded merely as a diphtheria bacillus in an attenuated condition, and should be spoken of as such. In taking up this position we left it an open question whether the bacillus might not be a special one, differing from the bacillus of acute diphtheria in certain respects afterwards

to be determined. A year ago, though we could not absolutely distinguish the cultural and morphological characters of the organism from those of every other species of the diphtheroid bacillus, we felt justified, in view of additional evidence we had collected, in maintaining that the organism is a special one, and we proposed to refer to it as the *Bacillus paralyticans*. It was suggested to us by Dr. M. H. Gordon that we might be helped in the differentiation of this organism from other diphtheroid bacilli by applying litmus broth tests to all of the organisms of this nature that we isolated from time to time in the course of our investigations. We would take this opportunity of acknowledging our great indebtedness to Dr. Gordon for suggesting the application of these tests, and also for other valuable advice regarding our special bacteriological investigations. We have applied Dr. Gordon's method and have used as test-substances glucose, saccharose, lactose, salicin, starch and dextrin. The following table shows the reactions previously ascertained to be given by various of the already known members of the diphtheroid group to the first five of these substances. The results are those obtained by Dr. Gordon, supplemented by some ascertained by Benham (7). The reaction of each organism to Neisser's method is added.

Bacillus.	Glucose.	Saccharose.	Starch.	Salicin.	Lactose.	Reaction to Neisser's method.
Klebs-Löffler . . .	+	—	—	—	—	Positive.
Hoffmann's b . . .	—	—	—	—	...	Negative.
Xerosis b . . .	—	—	—	—	...	Negative.
Diphtheroid x . . .	+	+	—	+	...	...
Diphtheroid y . . .	+	+	+	—	...	...
<i>Bacterium muris</i> (Klein)	+	+	...	+	...	Positive.
<i>B. corynebacterium</i> <i>segmentosus</i>	+ or —	+ or —	...	...	+ or —	Negative.

The sign + indicates that a distinct acid reaction is produced by the organism after incubation at 37° C. for three days.

The results obtained by Knapp (8) and Graham-Smith (9) with the media of Hiss, differ as regards the above test-substances only in certain points that are hardly material for our present purpose. It is, however, to be noted that both



state that an acid reaction is produced in dextrin broth within seven days by the Klebs-Löffler bacillus.

It has not been possible for us to make any very extensive investigation into the broth reactions of the diphtheroid bacilli that can be isolated from general paralytics and tabetics. We have simply tested with what appeared to be the most important substances the various diphtheroid bacilli that we have happened to obtain in pure culture in the course of our recent work. The following table shows our results up to the present date. All of the strains gave a positive reaction with Neisser's method, but in the case of Nos. 9, 10, and 12 the metachromatic granules were minute, and occurred in only a comparatively small number of the bacilli.

*Table showing the Litmus Broth Reactions of Diphtheroid Bacilli isolated from Cases of General Paralysis and Tabes Dorsalis.*

No.	Patient.	Disease.	Source of bacillus.	Glucose.	Saccharose.	Starch.	Salicin.	Lactose.	Dextrin.
1	L.	G. P.	Cerebro-spinal fluid	+	-	-	-	-	-
2	M.	G. P. and tabes.	Urine	+	+	-	-	-	-
3	M.	"	"	+	+	-	-	-	-
4	M.	"	"	+	+	-	-	-	-
5	N.	G. P.	Bronchial gland	+	+	-	-	-	-
6	M.	G. P. and tabes.	Urine	+	-	-	-	-	-
7	M.	"	"	+	-	-	-	-	-
8	M.	"	"	+	-	-	-	-	-
9	M.	"	"	-	-	-	-	-	-
10	M.	"	"	-	-	-	-	-	-
11	M.	"	"	+	+	-	-	-	-
12	W.	G. P.	Conjunctiva	-	-	-	-	-	-
13	M.	"	Peritoneum	+	+	-	-	+	-
14	M.	"	"	+	+	-	-	+	-
15	C.	Tabes	Urine	+	+	-	-	-	-
16	G.	"	"	+	+	-	-	-	-
17	N.	G. P. and tabes	"	-	-	-	-	-	-
18	G.	G. P.	Cerebro-spinal fluid	+	+	-	-	-	-
19	B.	"	Urine	+	-	-	-	-	-
20	Klebs (from	- Löffler bacillus a case of diphtheria)	lus (virulent)	+	-	-	-	-	-

In this series, among the strains of bacilli having very prominent metachromatic granules, it seems to be possible to recognise two special types, one having the broth reactions of the Klebs-Löffler bacillus, causing an acid reaction in glucose broth only, and the other differing from this in producing acid

also in saccharose broth. Two strains, in other respects similar to the latter, were found to produce acid also in lactose broth. It seemed to us at one time that the negative reaction of the first type to dextrin might serve to distinguish it from the Klebs-Löffler bacillus, but we have been unable with the dextrin broths we have used to obtain an acid reaction with the Klebs-Löffler bacillus even after seven days. The reactions given by the bacillus of the second type do not seem to correspond exactly to those of any diphtheroid bacillus hitherto described. The clear differentiation of these two types has been the main result of the application of these tests.

The virulence of six of these strains (Nos. 1, 4, 13, 16, 18 and 19) has been tested upon guinea-pigs. Hypodermic injections of 100 mgrm. of agar cultures have produced no apparent effects. With bacillus No. 1, the results of hypodermic injection into mice of doses of from 20 to 60 mgrm. have been inconstant. Some of the mice, after showing a few morbid symptoms, remained well. One which received an injection of 40 mgrm., and after twenty-three days another injection of 30 mgrm., died three days later. Another mouse injected subcutaneously with 40 mgrm. of the killed culture (heated to  $128^{\circ}$  C. for half an hour) died six weeks afterwards. Another mouse injected with 2.5 cc. of immune sheep's serum taken from a tube containing 5 cc. of this serum which had been incubated at  $37^{\circ}$  C. along with 40 mgrm. of the bacilli for forty-eight hours, became acutely ill ten minutes after the injection and died within forty-eight hours. Bacillus No. 4, which, as will presently be described, has caused acute and chronic disease in rats when given in the food, has not proved very virulent to mice when injected subcutaneously. Four successive injections, at intervals of from nine to fourteen days, resulted in the death of one mouse about four weeks after the last injection. Single injections of the usual dose of cultures of bacilli Nos. 8 and 13 had no distinct effect upon mice. Single injections of 40 mm. of cultures of bacillus No. 18 proved fatal to each of two mice on the fifteenth day.

#### *The Experimental Production of General Paralysis in Rats.*

In previous papers we have described the results of experiments, carried out by Dr. Shennan and one of us, in which rats

were fed for several weeks with cultures of a threading diphtheroid bacillus isolated from the bronchus of a general paralytic. It is certain that the organism belonged to the first of the two types that we have reason to believe to be of importance in general paralysis. We have recently made a more complete examination of the tissues of the animals that were the subjects of this experiment, and find that the lesions presented by them resemble those that occur in certain cases of general paralysis even more closely than we have hitherto claimed. All of four animals in which the experiment was fully carried out died after manifesting parietic symptoms, and their cerebral tissues show periarteritis, neuroglia proliferation and severe nerve-cell lesions. Three out of the four show extensive invasion by the thread form of the bacillus identical with that which occurred in the patient from whom the bacillus was isolated, and with that which has been found in several cases of general paralysis and in the bladder-wall in one case of tabes.

Last autumn we commenced another series of similar experiments with rats. Sixty animals in all have been fed with cultures of various strains of diphtheroid bacilli derived from cases of general paralysis or of tabes dorsalis. These cultures were simply added from time to time to food similar to that upon which control animals were fed. The strains selected were Nos. 1, 4, 8, 13, and 16 in the foregoing list. Very small doses were given during the first three or four weeks, the object being to immunise the animals if possible, and to ascertain the nature of any morbid changes that might occur as the defences of the animals gradually broke down before the persistent attack of the bacilli. This plan was adopted because in the previous series of experiments the rats succumbed far too quickly to permit of advanced chronic changes being established. A certain number of the animals have already died, but the experiments are not yet completed, and we shall therefore here deal only very briefly with some of the results so far obtained.

The first experiment has consisted in the feeding of twelve animals with cultures of a diphtheroid bacillus isolated from the cerebro-spinal fluid of a case of general paralysis *post mortem*. It was originally a threading bacillus, and it was the only organism that developed in the media. It produces acid in glucose broth only. It is undoubtedly a bacillus identical

with the one used in the previous set of experiments upon rats. As yet only three of the animals have died. They did not exhibit very evident paretic symptoms. All of them were found to have advanced tuberculosis affecting the lungs. The cerebral changes are of too slight a nature to be regarded as of any importance. Some of the remaining rats are now showing signs of paresis. It is evident that this organism is one of much less virulence to rats than the bacillus used in the experiments carried out in 1903.

In the second experiment twelve rats have been fed with a bacillus isolated from the urine of a case of tabo-paralysis. The organism has prominent metachromatic granules, but has never shown any tendency to form threads. It produces acid rapidly and abundantly in glucose broth, somewhat less rapidly in saccharose broth. This bacillus has proved much more virulent than the preceding one. After about seven weeks one of the animals was seen to be acutely ill. It was slow in its gait, feeble, and extremely irritable. Next day it was paralysed in all its limbs. It lay for several hours quite motionless, excepting for the respiratory movements, which gradually became reduced in number, until they occurred only four times per minute. The animal died within thirty hours of the first appearance of acute symptoms. Tubes inoculated from the heart's blood and spinal cord remained sterile. The chief morbid change revealed by microscopical examination is acute degeneration of most of the nerve cells of the spinal cord. The nerve cells of the brain present similar changes, but they are much less severe. A few days after the death of this animal two other rats began to show similar but less marked symptoms. After four or five days the acute symptoms passed off, but the animals remained lethargic and feeble. Two months later both of them were noted to be more feeble, very slow and uncertain in their gait, and much emaciated; they were dull, drowsy, and stupid. All of these symptoms gradually increased, and the two animals died within about a fortnight of each other, twenty-two and twenty-four weeks from the commencement of the experiment. The remaining nine rats have never had any acute illness, but all of them have gradually become thin, enfeebled, lethargic, impaired in their power of co-ordination, and stupid-looking. Five of them are now dead. The four that remain are extremely feeble, irresponsive and demented-



looking. All of the rats of this series that have succumbed to a chronic illness showed similar changes affecting the nervous system, differing only in degree in the individual cases. There are extremely well-marked chronic degenerative changes in the nerve cells of the spinal cord, less advanced changes of a similar character in the nerve cells of the cerebral cortex. In several of the cases the cerebral arterioles show distinct periarteritis, and the neuroglia also shows some proliferative changes. Cultures were made from the blood and various internal organs of most of these rats, but no growth of the bacillus with which the animals had been continually fed could be obtained.

In the rats the subjects of the three other experiments the morbid phenomena have been much less distinct, but parietic symptoms are now developing in some of the animals in two of the cages.

On the ground of these and other observations that we shall allude to presently, we maintain that there are at least two different species of diphtheroid bacilli that are capable of producing general paralysis and tabes dorsalis. The one is an organism which, morphologically and in its broth reactions, in so far as we have yet been able to ascertain them, resembles the Klebs-Löffler bacillus, but is distinguished from it in frequently being virulent to mice and rats, and in having a thread form, which is assumed when it invades the partially immunised animal, and under analogous conditions *in vitro*. It is the organism for which we have already suggested the name *Bacillus paralyticans*. The other species of diphtheroid bacillus is one which has a very similar relationship to the *Xerosis bacillus*, which by some observers has been found to produce a small amount of acid in glucose and saccharose broths. It differs from it, however, in showing prominent metachromatic granules, in producing acid quickly and abundantly in glucose and saccharose broths, and in frequently being virulent to mice and rats. This organism has little or no tendency to form threads. It is thinner and shorter than the other. We therefore propose to refer to the first organism as the *B. paralyticans longus*, and to the second as the *B. paralyticans brevis*. Just as it is known that individual strains of the Klebs-Löffler bacillus vary considerably in their microscopical and cultural characters and in their virulence, so also individual strains of these two species that have proved capable of causing paresis in rats present differences that

cannot be regarded as essential. Chief among these differences is that of virulence. Corresponding to infection by one or other of these two types of diphtheroid bacilli, there are, we maintain, two different types of general paralysis, closely resembling each other and yet essentially distinct. Cases of infection by both organisms are probably common. We believe that in all cases of advancing general paralysis and tabes dorsalis one or other of these bacilli, or some other organism endowed with similar pathogenic powers, is gaining access to the lymph-stream and to the blood. It seems to us very probable that we have not yet differentiated all of the species of diphtheroid bacilli that may occur in such cases and exercise a pathogenic action of a similar nature.

*Intra-corpuseular Bacteriolytic Indices of Immunised Sheep and of Persons suffering from General Paralysis and Tabes Dorsalis.*

In a previous paper we have described a method of estimating the bacteriolytic power of the polymorphonuclear leucocytes in relation to the *Bacillus paralyticus*, and have contended that, as a rule, the index expressive of this power is abnormally high in general paralytics. In the course of the immunisation of four sheep with bacillus No. 1 in the foregoing list, we have endeavoured to ascertain the effect of the process upon this index. The following table shows the results :

Time after commencement of process of immunisation.

Sheep.	Before immunisation.	Six weeks.	Six months.	Thirteen months.
No. 1	4.3	41	—	73
„ 2	0	48	—	78
„ 3	2.5	—	—	59.5
„ 4	6	—	85	—

These results seem to us to justify the conclusions we have already formed in regard to these indices in cases of general paralysis, although in the human subject the matter is complicated by the circumstance that more than one species of diphtheroid bacillus is capable of causing the disease. The following table shows the observations that we have made upon the human subject during the past year :

No.	Nature of case,	Bacillus used,		Index.
173	Control, healthy	<i>Bacillus paralyticus longus</i>		13
187	Dementia præcox	"	"	17.5
188	Control, healthy	"	"	8
189	" "	"	"	16
190	" "	"	"	28
196	" "	"	"	12.5
170	General paralysis	"	"	76
171	"	"	"	75
172	"	"	"	74
174	"	"	"	92
175	"	"	"	78.5
177	"	"	"	83.5
186	"	"	"	67
191	"	"	"	61
192	"	"	"	81
197	Tabes dorsalis	{	"	7.5
			"	61
			<i>brevis</i>	
			<i>longus</i>	
198	General paralysis	{	"	44
			<i>brevis</i>	42.5
			<i>longus</i>	66
199	"	{	"	37
			<i>brevis</i>	
200	"	{	"	17
			<i>longus</i>	
		{	"	71
			<i>brevis</i>	

*Evidence of the Rapid Destruction of the Bacilli in the Blood.*

Although we have succeeded in obtaining cultures of diphtheroid bacilli from the blood and from the cerebro-spinal fluid of general paralytics during life, there can be no doubt that in the vast majority of cases it is impossible by any method yet known to obtain such cultures. We have maintained that this difficulty is due, not necessarily to the absence of the bacilli from these fluids, but to the fact that the organisms are quickly taken up by phagocytic cells, and devitalised and dissolved. We have made some observations upon sheep in process of immunisation to the *Bacillus paralyticus longus*, the results of which are consistent with this explanation, as well as with the failures to obtain growths from the blood of general paralytics.

Two sheep, which had previously received seven injections of bacilli in the course of about five weeks, were each injected subcutaneously with 40 mgrm. of living bacilli, and two hours afterwards several large platinum loopfuls of blood were smeared upon agar surfaces. The tubes were allowed to remain in the cold for two hours, and were then incubated. No

diphtheroid bacilli appeared. In blood films made at the same time as the inoculations of the tubes, diphtheroid bacilli could be seen in considerable numbers, especially in the lymphocytes.

After the immunisation of these two sheep had been continued for over six months, inoculations were again made from the blood four hours after the subcutaneous injection of 80 mgrm. of bacilli into each. Two agar tubes and one broth tube were used. All of the tubes from the first sheep remained sterile. In the case of the second sheep a few colonies of the bacilli appeared in one of the agar tubes, and there was also a growth of the organism in the glucose broth.

#### *Observations in a Case of Tabes.*

We also wish to mention some special observations we have made in a case of early tabes dorsalis, as they support in a remarkable way some of the views that we have advanced. The patient's urine was found to be loaded with two micro-organisms, a diphtheroid bacillus of the type described as the *Bacillus paralyticans brevis* and a diplococcus resembling the gonococcus, but Gram-fast. For a time we treated the patient by the vaccine method, injecting definite doses of killed cultures of the bacillus isolated from his urine. On several occasions these injections were succeeded, after a few hours, by a recurrence of the patient's lightning pains. It was quite clear that these attacks were consequent upon the injections. Very considerable improvement took place in the patient's condition when this treatment had been continued for some weeks. His attacks of pain became much less frequent and less intense. Having, with the same bacillus, immunised a sheep in such a way as to produce a bactericidal serum, we treated the patient for several weeks with this serum, given first hypodermically and subsequently by the mouth. This treatment has resulted in further improvement, but it has been found that if four or five days are allowed to elapse without a dose of the serum there is still some return of the pains. It is also of interest to note that in this case the urine is now sterile. The patient has been taking helmitol for about six months. In another case of tabes with the same two organisms in the bladder, the continuous administration of helmitol has been followed by the disappearance of the diplococcus, but the bacillus is as abundant as ever. It,



therefore, seems probable that the eradication of the bacillus from the bladder in the first case was due to the action of the serum.

*The Infective Foci in General Paralysis and Tabes Dorsalis.*

In previous papers we have maintained that in all advancing cases of general paralysis and tabes dorsalis there is some more or less extensive infective focus in which the pathogenic bacilli are invading the tissues. We have obtained histological evidence of the presence of such foci in the alimentary tract and bronchi of general paralytics, and in the bladder of tabetics. In the course of the past year we have made some observations upon the living subject which seem to us to confirm the doctrine of the infective focus and also to throw some fresh light upon the subject.

In association with the presence of abundant diphtheroid bacilli in the female genital tract, we have, in two cases, found scrapings from inflamed cervix to show numerous diphtheroid bacilli in the interstices of the tissues, proving that the bacilli were invading. Similarly, in two cases of chronic conjunctivitis in general paralytics, scrapings from the conjunctiva showed diphtheroid bacilli with prominent metachromatic granules invading the tissues. In another case of advancing general paralysis, a scraping from the nasal mucosa, taken from about the middle of the septum, showed abundant similar diphtheroid bacilli lying between the epithelial cells and among the connective tissues. Further, we find that general paralytics usually have more or less swollen and spongy gums, which readily bleed. This morbid condition occurs especially in proximity to the teeth. Between the tooth and such a swollen gum there is almost constantly a distinct pocket in which material collects, and this material, according to our observations, is loaded with diphtheroid bacilli showing prominent metachromatic granules. In fifteen cases of general paralysis presenting this swollen and spongy condition of the gums, we have made a microscopical examination of the spongy tissue after scraping some of it away with a sharp spoon. In thirteen of the cases diphtheroid bacilli have been recognised in the tissue-spaces.

We have previously advanced evidence in support of the

view that in *tabes dorsalis* the special infective focus is in most cases in the bladder-walls, and we have pointed out how this opinion harmonises with the results of the experimental work of Orr and Rows. The more recent observations that we have made in cases of *tabes* have served to confirm our view, which we maintain to be correct notwithstanding the criticisms that have been passed upon it. We would, however, extend the possible area of the infective focus to the whole of the genito-urinary tract and the lower portion of the alimentary canal. We now feel justified in drawing a similar inference with regard to general paralysis, and in stating that the infective focus in this disease is chiefly located in the buccal and naso-pharyngeal mucosæ. We assert that the clinical phenomena of *amimia*, affecting mainly the lower part of the face, dysarthria and facial tremors are essentially dependent upon this local invasion and consequent formation of toxins, which are in large part carried to the cranial cavity by way of the cranial nerves. This view is also in harmony with the more recent experimental observations of Orr and Rows (10), who have found that, just as tabetic lesions can be produced by toxins passing up the sheaths of the spinal nerves, so also certain of the central lesions that occur in general paralysis can be produced by toxins that are experimentally made to pass up the sheaths of the cranial nerves. On the ground of their observations they definitely apply the lymphogenous theory of infection to general paralysis as to *tabes*.

There are one or two points that we should like to emphasise in concluding this paper. The diphtheroid group is a very much more extensive one than has generally been supposed, and the bacillus of acute diphtheria is by no means the only member of the group that is pathogenic to man. Within the last two or three years the multiplicity of species in the diphtheroid group has come to be recognised by various workers, more especially by Gordon in this country, who has directed attention to the fact that many of these organisms that have commonly been regarded as non-virulent diphtheria bacilli give an acid reaction with saccharose broth, and by Hamilton and Horton (11) in America, who have isolated very numerous species. We would endorse the opinion of Benham that the further study of this group will probably lead to great advances in our knowledge of the pathology of some obscure

diseases. In this large group of organisms there are at least two species which are capable of causing paresis in rats, and which can be isolated especially from cases of general paralysis and tabes dorsalis. In patients suffering from these diseases, as well as in other persons, the mere presence of these organisms upon a mucous surface is of little significance. It is necessary to find evidence of invasion of the tissues by the bacilli. The occurrence of such invasion can be demonstrated in cases of general paralysis. There are good grounds for believing that a bacillus so invading tends gradually to become raised in virulence, especially towards the individual attacked. The rational therapeutic aim in cases of general paralysis and of tabes dorsalis ought to be to eradicate the infective focus. Our own researches during the past year have been mainly directed to this end, and we have used as our chief therapeutic agents bactericidal sera corresponding to the two varieties of diphtheroid bacilli we have found to be capable of producing paresis in rats. The work has been beset with very many difficulties, chief among which, we are now realizing, have been those occasioned by loss of virulence on the part of the organisms we have been using. Notwithstanding this, the results of serum treatment have in many instances been very encouraging. We hope to deal with this portion of our investigation at the Annual Meeting of this Association in July.

## REFERENCES.

- (1) *Rev. of Neurol. and Psychiat.*, April, 1903; May, 1903; July, 1903; *Brit. Med. Journ.*, October 24th, 1903; *Rev. of Neurol. and Psychiat.*, May 1905; February, March, April, 1906.
- (2) Eyre and Flashman, *Brit. Med. Journ.*, October 28th, 1905; *Arch. of Neurol.*, vol. iii, 1907.
- (3) Mott, *Brit. Med. Journ.*, October 28th, 1905.
- (4) Ferrier (and Bulloch), *The Lumleian Lectures*, 1906.
- (5) O'Brien, see *Brit. Med. Journ.*, September 29th, 1906.
- (6) Langdon, *American Journal of Insanity*, October, 1906.
- (7) Benham, *Brit. Med. Journ.*, May 25th, 1906.
- (8) Knapp, *Journal of Medical Research*, vol. xii, 1904.
- (9) Graham-Smith, *Journal of Hygiene*, July, 1906.
- (10) Orr and Rows, *Brit. Med. Journ.*, April 27th, 1907.
- (11) Hamilton and Horton, *Journal of Infectious Diseases*, March, 1906.

## DISCUSSION

At the Quarterly Meeting in London, May 16th, 1907.

THE PRESIDENT (Dr. ROBERT JONES) said this was a very important paper, and that if Dr. Ford Robertson was able by his researches to modify in any way that most awful scourge, general paralysis, he deserved to be looked upon as a benefactor to mankind. The question seemed to be essentially one for the bacteriologist. He had hoped that Dr. Mott would have been present at the meeting, but he wrote saying he greatly regretted that he was unavoidably prevented. He (the President), in the name of the Association, invited the visitors to take part in the discussion. He himself helped Dr. Flashman, who was working at the Claybury Pathological Laboratory, to get cultures from the throats of subjects of various forms of insanity, and those were taken to Dr. Eyre for further investigation. Perhaps Dr. Eyre would describe the results of his investigations.

Dr. EYRE thanked the President for his kind invitation to him to hear the extremely interesting paper of Dr. Ford Robertson. In the first place, he wished it to be clearly understood that wherever his opinions differed from those of Dr. Ford Robertson—i.e., where he did not see eye to eye with that gentleman—it was purely a difference of opinion, for in this matter his aim was the same as that of the author's, namely, to get at the ultimate truth, and that there was nothing beyond that in his remarks. He had hoped to have had rather more time to look over some of the records of the Bacteriological Department of Guy's Hospital, where he had the honour of carrying on the work, to find the number of clinical specimens in which one could detect micro-organisms which were morphologically comparable to those which Dr. Ford Robertson had introduced as being closely associated with the production of general paralysis of the insane. But he had only had time that day to run over the records of two or three months. But even in that time he had been able to pick out a lot of cases where organisms which, for purposes of statistics, he regarded as diphtheroids, had been isolated, and where he had considered they had not had any causal association with the condition under investigation, and he had merely made a few observations, so as to see that they were not the true diphtheria bacillus—the Klebs-Löffler—and had then discarded them, and gone on to the other organisms which were present in the material under examination. He found, for instance, that there was a case of tuberculous meningitis, where cerebro-spinal fluid was drawn off during life, and the only organism which could be obtained in the cultures from that material was an organism which, morphologically, was almost identical with the Klebs-Löffler, but it was non-virulent, and had certain other cultural peculiarities, which led him to call it, provisionally, the Xerosis bacillus. Some fluid from the pleura showed the same thing. Then there were two cultivations of the blood taken during life from cases of (?) infective endocarditis, and here, again, an organism was cultivated which was diphtheroid, but not true diphtheria. In tuberculous cystitis, again, there was found the Xerosis bacillus in company with the tubercle bacillus. In material from antral disease he had found the *Staphylococcus albus* and the bacillus Xerosis. He had not bothered about the film preparations of pus, etc., from chronic gleet, cases of gonorrhoea, and vaginal discharges, and so on, because, as was known to those who were accustomed to do much work on material supplied by general hospitals, the Xerosis bacillus, or at any rate a diphtheroid bacillus, was the commonest organism found in that material. What he had said was based upon 500 or 600 ordinary bacteriological examinations, carried out during a period of about three months. That would go to show that diphtheroid organisms were quite common contaminations of clinical material; that a diphtheroid organism was not the diphtheria bacillus, and very frequently it was undoubtedly one or other of the types of Xerosis bacillus. His own impression was that many of the organisms which Dr. Ford Robertson had been working with were types of the Xerosis bacillus. With regard to the cultural characters, Dr. Robertson had given some of the results of his cultivations in sugar media and carbohydrate media generally. Those reactions for the diphtheria group were worked out first by Knapp, in America, and he showed that with the organisms he was testing he could make out a fairly constant and definite difference between the three main types—viz.,



Klebs-Löffler bacillus, Hoffman's bacillus, and the Xerosis bacillus. One of the peculiarities of His's medium was not only that it showed the production of acid, but also that the medium became semi-gelatinous, almost clotted, because it was prepared with serum-water. Again, Gordon had been able to distinguish those three or four types by sugar reactions. It seemed to the speaker that when one commenced to include very large numbers of types, and strains of each of those types in one's sugar tests, one found that the reactions were not absolutely constant, but one found the Klebs-Löffler bacillus fermenting, not only glucose, but many of the other sugars. Fermentation in dextrin or starch was fairly characteristic of the diphtheria bacillus; and if one took a large number of strains it would be found that the Xerosis bacillus did not usually ferment glucose, though many of the strains would ferment glucose; and so on with all those organisms. In fact, the same thing happened with the diphtheria group of bacilli when tested with sugar reactions as happened with streptococci. Streptococci and staphylococci were said to be capable of differentiation according to their sugar reactions, but when they had been tested at varying intervals, after isolation, it was found that their sugar reactions were not absolutely constant, but one group would run imperceptibly into another. Another point upon which Dr. Ford Robertson laid considerable stress was the reaction to Neisser's stain. Neisser's staining method was not a constant attribute restricted to the bacillus of diphtheria, to start with. Taking large numbers of diphtheria bacilli examined when first isolated from the body, it would be found that 70 *per cent.* or 80 *per cent.* gave a very definite and characteristic "Neisser" stain, but the remaining 20 *per cent.* or 30 *per cent.* did not give that reaction. The Hoffman bacillus differed very markedly, in morphological character, from the Klebs-Löffler bacillus, so that it scarcely entered into consideration. But, as a matter of fact, about 40 *per cent.* of the strains of Hoffman's bacillus, when first isolated from the human body, would give a very typical Neisser reaction, in which metachromatic granules would be apparent. But they often varied rather from those presented by the diphtheria bacillus in their arrangement and size. Of the various types of Xerosis bacillus, 70 *per cent.* gave a permanent Neisser reaction, with metachromatic granules which were indistinguishable from those presented by the bacillus of diphtheria. Therefore it seemed to him that the "Neisser" differentiation of those diphtheroid organisms which were responsible for the production of general paralysis of the insane was hardly sufficient to justify the statement that those were not Xerosis bacilli on the one hand, or were not, occasionally, diphtheria bacilli on the other. Then, again, there seemed to be something lacking about the experimental work. For instance, the animals fed on those micro-organisms for such a long period did not show any marked symptoms for a long time, and then, when they had been kept in captivity twenty or forty weeks, and when death occurred, the fact that the organisms were found in them did not necessarily support the suggestion that death was due to the organisms. A good deal might happen to animals kept in confinement so long.

Dr. FORD ROBERTSON: But the controls were not affected, though they were in the same room.

Dr. EYRE said he failed to catch what Dr. Ford Robertson's objection was, but probably the meeting would be told more by that gentleman. The only other point he wished to mention was, that the estimation of the bacteriolytic index of the sheep before and after immunisation depending on alterations in the bacilli was surely open to a very big difference of interpretation, just in the same way as the identification of altered bacilli in the leucocytes of the patient was also open to a grave fallacy. He would be very glad to hear the exact method of estimating those alterations, and of the steps taken to render it absolutely certain that what were suggested to be "altered bacilli" in the leucocytes of the patient were really the remains of diphtheroid bacilli.

Dr. DAVID FERRIER said he had listened with great interest, as he was sure everyone in the room had done, to this most important communication of Dr. Ford Robertson. He feared that on most of the subjects brought forward in the paper he (Dr. Ferrier) was not competent to express an opinion, because he was not a bacteriologist. But as he had ventured to comment on Dr. Ford Robertson's views in a spirit of scepticism, he would like, on the present occasion, to define his attitude exactly in regard to them. He had expressed the view, in harmony with Dr. Mott and others, that tabes and general paralysis of the insane were the

same disease, and that in all cases not only was the prime origin, syphilitic infection, hereditary or acquired, but the degeneration itself was not syphilitic, in so far as it did not yield appreciably to anti-syphilitic remedies. He believed the evidence was in favour of there being a toxin circulating in the blood, which toxin must be generated continuously in order to cause the progressive deterioration and degeneration in the spinal cord and cerebral cortex. The question was, What was that toxin? where was it produced? And the further question which now arose in relation to Dr. Ford Robertson's paper was, Had he discovered that toxin and its origin? That was a question which was essentially bacteriological, and he could not pretend to express an opinion upon it. The objections which he had urged against the author's views, at least as they were propounded in the Morisonian Lectures, were founded upon the investigations of other bacteriologists. And one of the chief was that the *Bacillus paralyticans* of Dr. Ford Robertson was not sufficiently distinctive from other bacillary and diphtheroid organisms, which were found, both in health and disease, in almost every tissue. And Dr. Eyre, in his remarks that day, had indicated the same thing, that those micro-organisms were always with us. He did not find, in his previous investigations, that the diphtheroid organisms described by Dr. Ford Robertson were more common in general paralytics than among other forms of insanity, or even than among ordinary people. Certainly he, Dr. Ferrier, had never found the slightest trace of any organism in the cerebro-spinal fluid of patients suffering from tabes or general paralysis. In conclusion he wished to add that he would be greatly pleased if Dr. Ford Robertson's views should be proved to be correct, and thus place him in the happy position of having made one of the most important discoveries in medicine.

Dr. GEORGE DEAN desired to thank the Society for the honour conveyed by the invitation to be present. He thought the position with regard to the question under discussion was one of caution, both in regard to criticism and in reference to the acceptance of Dr. Ford Robertson's views. In the first place, one must realise the extraordinarily wide distribution of diphtheroid bacilli in Nature, and therefore the frequency with which they occurred—he might say the enormous frequency. For example, they were frequently met, as Dr. Eyre had already indicated, in accidental association with a pathogenic organism definitely known to cause the particular morbid condition in which the associated organisms were found. In addition, diphtheroids had been found in many normal conditions. For example, they were frequently found in connection with smegma, in both female and male, in the normal condition. They were frequently found in milk; and in the udders of a number of normal cows which he examined he found diphtheroids present. That might have some relation to the frequency with which Dr. Robertson found those diphtheroids in the stomach. At any rate, diphtheroids in milk was a common find. The same organisms were also found frequently in urine examined under ordinary conditions without any relation to the particular question under discussion. Therefore, as they were found in smegma and other sebaceous secretions, in urine, in milk, and as associated organisms in other pathological conditions, great caution ought to be observed in accepting any diphtheroid as having a causal relation with general paralysis unless it had very well-marked characteristics, including pathogenic action on experimental animals. In regard to the sugar fermentations which had been mentioned, it must be remembered that only a very small number of the diphtheroids which had been isolated had been submitted to those tests. So that until a much wider application of those tests had been entered into he thought no great weight should be placed on them. In regard to the results obtained by Dr. Robertson in the sheep, no matter whether the bacillus had any relation to tabes or not, the serum of the sheep would probably yield the results which the author had described. Taking almost any bacillus, one would expect to find an increase in the action of the serum after injection. So that in regard to the main issue as to whether the bacillus in question was the cause of the disease, that observation could not weigh very heavily. In reading Dr. Robertson's former paper, a point which struck him (Dr. Dean) very strongly was the absence of mention in detail of controls in setting forth the cultural results obtained from other forms of disease. He had read Dr. Robertson's papers with great interest, and he thought they deserved great consideration on the ground that they gave evidence of much perseverance

and close study of the whole question; and, as several speakers had already said, it would be an epoch-making discovery if it turned out to be true. He thought it possible that Dr. Ford Robertson had made the controls, but there was an absence of statement in regard to them. Recently he and others had been examining brains and cerebro-spinal fluid. Dr. Arkwright, working in the Lister Institute, had examined the brains and the cerebro-spinal fluid of cases whose death was suspected to be due to cerebro-spinal meningitis. Out of seven cases in which the brain and meninges were examined *post mortem* he twice found diphtheroids, and out of twenty-three cases in which he examined cerebro-spinal fluid he found diphtheroids on two occasions, and sometimes they were associated with other organisms, such as the meningococcus. That had been done in only the few months during which the matter had been worked at in the Lister Institute. So he thought if a large number of controls had been taken diphtheroids would have been found in many of them, and that naturally complicated the question very greatly.

Dr. C. E. BEEVOR said it seemed to him that if the bacillus was the cause of the disease it ought always to be found in cases of general paralysis of the insane, and also in all cases of tabes. Yet they had heard from Dr. Ferrier that in the observations he had made it was not found. And if Dr. Robertson's view was correct the bacillus ought not to be found in healthy people, or in cases of other diseases. Yet it was found in such circumstances. Moreover, if injected into animals it ought to produce the disease in them. But, as far as he could gather, the symptoms which had been caused by such injections were not those of general paralysis of the insane; neither, he believed, were the pathological changes resulting the same as those in that disease. He did not notice in the paper any reference to observations on the pupil. Fixation of the pupil was a symptom which was common to both general paralysis and locomotor ataxy; indeed it was the most important symptom there was in the earlier stages of general paralysis. On the other hand, he did not gather that there were changes in the posterior columns of the cord. The anterior horns appeared to have been affected in some of the animals injected, but that was not an evidence of either locomotor ataxy or general paralysis of the insane. Of course, everyone would be very delighted if what Dr. Robertson had set forth should prove to be one of the means of combating such a terrible scourge, but at present he did not think they could say they were on the high road towards that desirable end.

Dr. CANDLER asked that he might be allowed to make one or two remarks in connection with Dr. Ford Robertson's interesting paper, because he thought some mention of the work which had been going on at Claybury, in pursuance of Dr. Eyre and Flashman's work, might be of interest. Through the kindness of Dr. Jones, the President, he had been enabled to undertake an investigation with regard to the incidence of diphtheroid organisms in general paralysis, and in other forms of insanity, from cases in the wards of Claybury Asylum. The number of cases which he had examined in that way up to the present was not sufficient to be judged statistically. First of all, he took *post-mortem* material, and examined the blood, cerebro-spinal fluid, the intestinal tract, and the urinary tract of these cases. The number of *post-mortem* cases he had examined was 79, and of those 20 were general paralytics. In 3 of those 20, or 15 per cent., he was able to obtain diphtheroid organisms. In one case he isolated it in pure culture from the blood; it was isolated from the respiratory tract, where it was present in association with other organisms, and he could see it in the cerebro-spinal fluid, but he failed to isolate it on culture. Another case was from the stomach of a general paralytic, in which there were some erosions and catarrh. A third case came from the respiratory tract. Of the 59 cases occurring in insanities of other kinds than general paralysis he was able to isolate the diphtheroid organism in 4; in 3 the organism came from the respiratory tract, and in the fourth from the urethra. He then turned his attention to the examination of the urine of patients in the wards of the asylum, and he was assisted in drawing off the urine by Dr. Barham. It was done by inserting a sterile catheter, so as to, as far as possible, obtain the urine in a proper condition for examination. The centrifugal deposit was first subjected to microscopical examination, and then the material was grown. Out of 26 cases of general paralysis he obtained a diphtheroid bacillus in 2, an average of about 8 per cent. With regard to the urethras, he



scraped the mucous membrane of the urethral canal by means of a platinum loop, after sterilising the tip of the meatus. In general paralysis he examined about 30 cases in that way, and found a diphtheroid organism in 5, or about 16 *per cent.* In the urine of cases not associated with general paralysis he obtained the organism only once out of 28 cases, and in the urethras of such cases 6 times in 44 cases, or 13·6 *per cent.* The points he wished to bring before the meeting were: that he had not been able to isolate the diphtheroid organism in any large proportion of the cases which he had examined for it, and that, therefore, the researches he had made were more in conformity with Dr. Eyre and Flashman's work, which was undertaken one or two years previously. In regard to the urinary tract he found there was an organism resembling what he believed to be of the Xerosis type, and that it was fairly prevalent. Recently, he believed, some reports had been published in foreign journals on the subject of the investigation of urethras in patients who were not the subjects of insanity, and that the percentage in which an organism of a diphtheroid type was found was commented upon as being fairly high. With regard to the circulating blood, he, like Dr. Robertson, had failed to obtain a diphtheroid organism, or at least in only one case did he find an organism which he suspected to be diphtheroid. But, though due care was taken to ensure sterilisation, both of arm and instruments, before venous puncture was carried out, he had obtained in one or two instances what he believed to be organisms of the pathogenic group. And although he could not make confirmatory statements on the subject, he suggested that it might be possible, during the final stages of general paralysis, for organisms of different varieties to obtain entrance into the blood-stream, and help in bringing about the end of the case. He desired to ask Dr. Ford Robertson one question about his investigations, namely, whether, during his examinations of blood from living patients, he had ever obtained other organisms as well as diphtheroid ones; or had he obtained nothing but diphtheroids in pure culture? He understood that Dr. Ford Robertson also examined the buccal mucous membrane by making scrapings of it and examining the stained specimens. Had he obtained pure cultures of the diphtheroid organism from that region? He asked those questions because the microscopic evidence in regard to particular organisms was often very deceptive, and could only be confirmed by isolation of them in pure culture.

Dr. GEORGE ROBERTSON said that it might be remarked about most of the speakers on the subject that day that their evidence had been more or less of a negative kind, and it had been, if anything, rather against the theory which had been put forward by Dr. Ford Robertson than otherwise. Three or four years ago Dr. Ford Robertson put forward a theory that general paralysis was almost constantly associated with the presence of a diphtheroid organism, and recently he had called it the *Bacillus paralyticans*, expressing his belief that it was the cause of general paralysis of the insane. He (Dr. George Robertson) was very pleased to be able to say he could confirm, right up to the hilt, Dr. Ford Robertson's original theory that general paralysis was associated with a diphtheroid organism. He and others had been, during the last six months, making an important series of observations in the laboratory of Stirling District Asylum, which confirmed Dr. Ford Robertson's original thesis. But when he said that, he did not wish anyone to go off with the idea that he believed that organism to be the cause of general paralysis of the insane. In the observations at his asylum, out of thirteen cases of general paralysis examined the organism had been found in eight. Their observations had been, in some respects, carried out under more severe conditions than those of Dr. Ford Robertson appeared to have been. Dr. Ford Robertson had himself very generously stated that the Stirling Asylum observations were in some respects ahead of his own. In the first place, Dr. Ford Robertson had made a collection of diphtheroids from various regions of the body—from the nose, pharynx, throat, bronchi, stomach, intestines, from pneumonic patches, from the bladder, the urine, and in one case they were discovered in a carious tooth. He did not know that the fact of diphtheroid organisms being obtained from all those places was any evidence in support of the idea that they had anything to do with general paralysis, because a diphtheroid organism, as other speakers had pointed out, was fairly common in the throats of people who were in perfect health at the time. They, at Stirling, had restricted their observations almost entirely to the blood and the cerebro-spinal fluid. The mere presence of an organism in the



blood meant a very serious condition, as its presence was bound to have some effects. Dr. Ferrier and Dr. Beevor had said, if the organism was the cause of the disease, it should be found in the blood or cerebro-spinal fluid, but they had not found it. Dr. Ford Robertson had obtained it in the blood in four cases, and in the cerebro-spinal fluid in two cases, according to the reports. The other respect in which he believed the Stirling work had been done under more severe conditions than Dr. Ford Robertson's was, that the organisms they obtained had been subjected to very exhaustive cultural tests and study. Instead of having a list of three or four, or even six, cultural media in which the behaviour of the organism had been studied, it had at Stirling been studied in more than a score of different media. And, under those conditions, the same organism had been obtained in seven out of thirteen cases. He was excluding one case in which the blood was taken, because in that case all the flasks were contaminated, and therefore it was impossible to say for certain whether the organism was there or not. In his paper Dr. Ford Robertson said that, owing to various reasons, it was almost impossible, by any means yet known, to obtain cultures from the blood. But at Stirling, out of the thirteen cases of general paralysis, cultures had been obtained from the blood in seven, and from the cerebro-spinal fluid in four. There was one case in which the result was negative, and that was in a patient who had a remission of the symptoms of general paralysis. The physical symptoms did not pass off, but the patient became quiet and sensible, and was able to earn his living outside the asylum, from which he was accordingly discharged. Only one examination of his blood was made, and it was found to be sterile. He would rapidly run over the nine cases he had mentioned, and state what reactions he obtained. The blood was first examined by means of smears, and in four cases the organisms were visible in such smears when stained by the Jenner stain. He had brought for exhibition photographs of organisms obtained in those cases. In the first photograph there were two groups of organisms, one containing seven and the other four bacilli. In seven of the cases a culture was made of the organism from the blood, which culture they sub-cultured and preserved, and recovered completely. They still had the different stains in their possession. In four cases the organism was obtained from the cerebro-spinal fluid, and some of them were duplicate cases. At *post-mortem* examination the organism was obtained from the heart-blood in one case, and in three cases from the cerebro-spinal fluid. In one case they saw the organism in the blood from the smears, from the cerebro-spinal fluid and blood during life, from the heart-blood after death, and from the cerebro-spinal fluid after death, and made cultures from it under every one of those circumstances. He had been interested in what Dr. Ford Robertson said about the types of organisms, because in one particular case they were more thread-like than in the others. They had gone through all the culture media in regard to these organisms, and all the organisms they found responded in exactly the same manner to the whole list of culture media—over a score of them—with the exception of the reactions in litmus milk. The majority of the organisms gave an acid reaction to milk, but some gave an alkaline reaction to it. He believed ordinary diphtheria bacilli sometimes gave different reactions to milk litmus, so that that reaction was not regarded as very important in that group. In one of the cases the organism was obtained during life from the blood and from the cerebro-spinal fluid, and it gave an alkaline reaction to the milk litmus. After death the organisms were obtained from the cerebro-spinal fluid, and it then gave an acid reaction to milk. Therefore no stress could be laid on that reaction, and it was the only reaction in which the organisms had not been alike. Thus they had established a condition which would satisfy the most strict bacteriologist that they had got hold of an organism which had been identical through all the cases. Doubtless his hearers would like to know the way in which the organism was obtained. On the staff of the asylum he had a lady who was a trained bacteriologist; she had worked for two and a half years with Dr. Parkes in the Transvaal in the Public Health Laboratory there. Dr. Parkes and his work were known to many present, and the association of the lady with him was a guarantee of thorough training. All the operations had been performed under the very strictest surgical precautions. Some of the members on various occasions had laughed at him when advocating the employment of trained hospital nurses for men, but at Stirling they had been found to be of very great

benefit, because those nurses had been instructed to prepare the patients exactly as for a surgical operation, and the assistant medical officer had to perform the operation as if it were a surgical one, with gloves on his hands and everything sterilised. A special syringe had been used for the purpose. It was a glass syringe, with a needle at the point of it (exhibited). It was put into a glass tube, cotton wool put into each end, and the whole thing sterilised by being put into a hot-air chamber at a temperature of  $175^{\circ}$  C. On the patient's arm, after sterilisation, a tourniquet was put on, causing the basilic vein to stand out, the cotton wool was taken off one end of the tube, one end of a rubber tube was slipped over the end of the syringe and the other end was put into the mouth, the syringe was plunged into the vein and the blood sucked into the tube. That was an absolutely sterile procedure. The blood was poured into flasks of broth and they were incubated. It was a very troublesome process to get the organisms to grow, but they had succeeded in all those cases. He hoped he had done Dr. Ford Robertson full justice when he said they had at Stirling confirmed his original statement that general paralysis was associated almost invariably with a diphtheroid organism. But he wished to make a further remark before closing in order to do justice to Dr. Muirhead, their bacteriologist. When they started those observations they wrote to Dr. Ford Robertson to obtain from him a culture of the *Bacillus paralyticans*. Dr. Ford Robertson sent a culture which he said was, in his opinion, the *B. paralyticans*. A very careful study of the organism was made at Stirling, with all its cultural reactions, and the organism which Dr. Robertson sent them was totally different from that which they had themselves discovered, *i.e.*, in many respects. In the first place, Dr. Ford Robertson's organism was a very luxuriant grower in all fluid media. And there was also a pellicle produced on many fluid media in which it grew. But the organism they obtained in their cases of general paralysis he had mentioned was not one of luxuriant growth. It grew differently on gelatine, it grew differently on saccharose broth. The Stirling organism produced an acid reaction. Though he said all that, he did not wish his hearers to suppose that the organism which Dr. Ford Robertson discovered might not also be associated with general paralysis; it was possible it might be. At Stirling they had not yet obtained in any case Dr. Ford Robertson's organism, but possibly they might come across it later. It was possible that they might yet find that a large group of diphtheroids produced toxins which reacted on the nervous system and which, if it could not yet be proved caused general paralysis, probably played an important part in the symptomatology of the disease.

Dr. ORR said that he felt reluctant to take part in the discussion, as the whole question seemed to centre round the bacteriological point of view; and unless one was an absolute expert in bacteriology one could not take up either a positive or a negative position. Still, he would like to offer a few remarks on the extreme possibility that tabes and general paralysis of the insane were both the result either of a toxin or of a bacillary infection of the central nervous system. As to how that came about there were not very definite data available, or as to the focus at which those bacilli were situated. But there were absolute data as to there being an anatomical path leading up the peripheral nerves, both spinal and cranial, towards the central nervous system. It was well known that toxins readily ascended in the perineural sheaths, and recently Dr. Rows and he had had the opportunity of examining one case in which a rod-shaped bacillus, often assuming a thread-like form, such as Dr. Ford Robertson pointed out, but as to whose identity he (Dr. Orr) was not yet certain, had been traced all along the perineural lymph sheaths into the cord, by the anterior and posterior roots, into the central canal, and along the numerous septa leading into the white matter. Thus there was definite evidence of the fact. And Dr. Rows and he were of opinion that the infection in general paralysis did not come about through the blood-stream, but certainly along the lymph paths. Three gentlemen at that discussion had mentioned the occurrence of diphtheroid organisms in the blood-stream. His own view was that it was not necessary for the blood-stream to be infected in order to cause tabes or general paralysis; either could come about by infection of the lymph paths. He thought it probable that any invasion of the blood-stream by the organism came late in the disease, or might be due to some accident.

Dr. WASHINGTON WILLIAMS said it appeared to him that before one could

accept as authoritative the controversion of the statements of Dr. Ford Robertson, it must be known that the organisms mentioned by those who criticised his observations were the same as the author spoke of, namely, those which consistently gave certain reactions and did not give others. That had not yet been stated, and until it had been, he, as a neurologist, would accept with great diffidence the criticisms directed against Dr. Ford Robertson's work.

Dr. CHARLES MERCIER said he had the same qualifications, when intervening in the debate, which certain of the other speakers had, in that he was bacteriologist. But if medical men applied to the question the ordinary canons of evidence and of causation, he thought that they would be obliged, at present, to return a verdict of "not proven." If they were to accept the doctrine that there was a certain bacterium which was the cause of general paralysis, then certain conditions must be satisfied. The organism must be identifiable. At present it was not identifiable with certainty. In the second place, it must be found in every case of general paralysis; but he gathered that it was not yet found in every case of that disease. In the third place, it must not be found in any case which was not one of general paralysis, and he gathered that it was found in cases which were not general paralysis. Those were the ordinary canons of evidence and causation, and those canons, he thought, must be satisfied before one could admit the existence of a definite *Bacillus paralyticans*. It must be remembered that general paralysis was one of the most distinct of all diseases, and so also was tabes. It was very rarely that a difficulty arose in connection with a case of general paralysis or tabes, except in the very early stages. And one would expect it to have a cause which was equally distinct. One would expect the cause to be such that it was recognisable in every case. It had also to be remembered that general paralysis was a disease which led to a very slow death—the patient died slowly, and as he was dying his tissues were all in a state of what might be metaphysically called very low vitality for weeks, months, and even years. And tissues in that state were, he supposed, a most favourable nidus for all kinds of different micro-organisms, and it would be very strange if, when a patient was in the later stages of general paralysis, many micro-organisms of many kinds were not found in the various tissues and fluids. That was how the matter struck him, as an outsider, judging it by the ordinary canons of evidence, without any special knowledge of the subject.

Dr. McRAE said he thought it would be better if Dr. Ford Robertson would reply on the discussion, and he (Dr. McRae) would make a few general remarks. With regard to the point which had been made as to the presence of the bacillus, the authors had said from the beginning that the mere presence of the organism was no proof that the bacillus was or was not the cause of the disease. Several of the bacteriological experts who criticised the paper laid great stress upon finding the bacillus everywhere. As a matter of fact, it was well known that the skin and genitalia were commonly infested with diphtheroid bacilli. If one could show by various methods a specific reaction in animals and human beings to that bacillus, or, as they had done, to anti-sera produced in animals by that organism—and he had been working for ten months with sera, and had clinical records which were being held over until the July meeting—surely they were getting very near to establishing at least a very strong suspicion that they were dealing with the cause of a certain specific disease. For fifty years the profession had been subjected to the tyranny of the belief that in general paralysis all the bacterial infections were secondary to the degenerative process. But he wished to point out that the authors were not dealing with terminal infections, but with cases which were going about and able to work, and blood-films taken from such patients showed those micro-organisms. With regard to this so-called secondary invasion of organisms, or, as it had been called, terminal invasion, why should a specific disease like general paralysis allow itself to be subjected to a particular terminal form of invasion? Any form would be sufficient to cause the death of the patient if he was already suffering from a degenerating disease. It was customary to believe that general paralysis was a primary degeneration of the brain, but how did a degenerating disease have remissions? How was it that a man went into the asylum with the disease, in some instances practically moribund, but subsequently improved so that he could wheel barrows about? The toxic theory seemed the most reasonable; it enabled one to understand how the patient might form immune



bodies which enabled him to get better for a time. With regard to the bacteriological point, the authors were cognisant of the fact that there were many varieties, and Hamilton and Horton, of America, had found thirty-three varieties of the bacillus, eighteen of which had been proved to be virulent. The two species of bacillus dealt with had specific broth reactions, and when these tests were tried again after many months they gave the same reactions. These reactions were distinct from those hitherto described in the case of any other diphtheroid bacillus.

Dr. G. H. SAVAGE, in response to the President, said he came entirely to learn. He had seen a great number of specimens by Dr. Ford Robertson when he was in Edinburgh, and he left him with a very open mind. He (Dr. Savage) felt very strongly that general paralysis had a toxic origin, and that the particular toxin would be found sooner or later. Such good work as Dr. Ford Robertson was doing was to be encouraged in every way, and it was recognised by the Society and by other medical societies in London. He felt very grateful to Dr. Ford Robertson. He was a botanist himself, and the more knowledge he acquired of the lower organisms the more impressed was he by the enormous differentiations between the varieties. He thanked Dr. Ford Robertson, in the name of the older men, who were too old to work along the lines which he was following out. They were grateful for what they had heard, and would be glad of more.

Dr. URQUHART said that, as one of the supporters of the Scottish Asylums Laboratory, he felt very much indebted to Dr. Savage for the way he had spoken of the work done at that laboratory. He (Dr. Urquhart) did not wish to intervene between the meeting and Dr. Ford Robertson, because he fully expected that gentleman to say something about the possibility of mixed toxins, and especially about the numerous control experiments which had been made during the past six years.

The PRESIDENT (Dr. ROBERT JONES) said he would be glad to associate himself from the chair with the remarks from both Dr. Savage and Dr. Urquhart. Dr. Ford Robertson had come down to have his opinions challenged, and they had been challenged from a special expert point of view. He confessed to having a marked sympathetic appreciation of Dr. Robertson's work, and was ready to try the treatment suggested by the investigations on some cases of general paralysis, and he did hope to do so. He believed that Dr. Mott was arranging with the Lister Institute to have some special serum prepared of that organism, or mixed organisms, and he (Dr. Jones) hoped to be able to try that at Claybury. Dr. McRae referred to one point which he (the President) regarded as very important, namely, remissions in general paralysis; and one was apt to draw conclusions as to the result of treatment from the fact that spontaneous and ordinary remissions did occur in some cases of general paralysis. He had two cases in his memory. On one, at Claybury, succinate of mercury was tried, and that patient went out very much improved. Another had a thorium hydroxide cap, which he wore for a time and got very much better, yet he was, so far as his (Dr. Jones') diagnosis went, a typical case of general paralysis. He heard of him for nearly two years afterwards, and he was quite well. One was apt to draw conclusions from such cases that *post hoc* was *propter hoc*. The general opinion seemed to be, as summarised by Dr. Mercier, that the association of the special bacillus as the proximate cause of general paralysis was not proven; but Dr. Ford Robertson's paper and his work had had the effect of causing interest and work in others, and thus was a marked mental stimulus in the profession.

Dr. FORD ROBERTSON, in replying on the discussion, said there were several points which he would like to meet. It seemed to him that all the examples that Dr. Eyre had given of diphtheroid bacilli being found in meningitis, infective endocarditis, etc., were strong presumptive evidence in favour of Dr. Benham's view that the further study of the diphtheroid group would probably lead to important advances in our knowledge of some obscure diseases; but he did not see any other bearing which those observations had upon this particular research. Dr. Eyre seemed to think that many of the types described in the paper were simply the Xerosis bacillus; he regarded as this bacillus many organisms which could be shown to produce a strong acid reaction in glucose and saccharose broths. He (Dr. Robertson) would point out that in making such a contention Dr. Eyre was differing from other bacteriologists. Dr. Eyre and Dr. Flashman in their paper tried to classify the diphtheroid bacilli found into three species, but the investiga-



tions of others were proving that there were really very numerous separate species. Dr. Eyre said Dr. Gordon had followed Dr. Knapp in using the litmus broth tests, but he (Dr. Robertson) believed that Dr. Gordon preceded Dr. Knapp by a considerable time. Dr. Eyre said the reactions were not constant. That might be his experience, but as far as he (Dr. Robertson) could see from Dr. Eyre's paper, he had not studied those broth reactions to a very great extent. He knew that in the experience of others those broth reactions were remarkable in their constancy. Dr. McRae and the speaker had tested various strains again and again, at intervals of many months, and it was remarkable how the results had come out exactly the same. Whatever changes in virulence these organisms might undergo with the lapse of time, they underwent none in their broth reactions. It was simply a matter of Dr. Eyre's criteria of differentiating diphtheroid bacilli being different from those of other people. Dr. McRae and he did not attach very much importance to the presence or absence of metachromatic granules; that was largely a matter of the media on which the organisms were grown. Dr. Eyre had said that their method of estimating the intra-corporal bacteriolytic index was open to grave fallacy. He (Dr. Robertson) supposed there was a margin of error in all such methods, as there certainly was, for example, in that of estimating the opsonic index. But Dr. Eyre had not worked with their method, and was therefore not in a position to say that it was fallacious. He also said he would like to read the account of the method, but it had been published in detail. It would conduce more to good feeling in these discussions if Dr. Eyre read their papers before criticising them. He desired to make a protest against the action of Dr. Eyre and Dr. Flashman in re-publishing quite recently a paper which first appeared in the *British Medical Journal* in November, 1905. He protested at the time in a letter to the Editor of the *British Medical Journal* that it was a gross misrepresentation of the views of himself and his colleagues, and notwithstanding that protest, the paper had been re-published in the *Archives of Neurology* of 1907. Such a procedure led to the dissemination of grossly erroneous views of their work. As he said in his letter, the grounds upon which the contentions of his colleagues and himself rested were ignored, and the only reference made to the evidence adduced was an erroneous one. Dr. Ferrier had expressed his adherence to the view that syphilis was the cause of general paralysis and tabes. He (Dr. Robertson) would be glad to endorse that view if Dr. Ferrier could produce any experimental evidence in support of the thesis. So far nobody had produced any. He had listened to Dr. George Dean's remarks with very great interest. Dr. Beevor asked about the fixation of the pupil in the experiments on rats. It was very difficult to examine the pupils of rats. If they had brought the rats with them and shown them to the meeting, he did not think anyone would have any doubt about their being general paralytic rats; the condition of the animals simulated that of general paralytics about as closely as was possible. The histological changes were such that both Dr. McRae and he were convinced that the lesions were those of early general paralysis. The rats died too soon for the complete picture of the disease to be developed. Accompanying periarteritis there were in some of the animals plasma-cells, just as in the general paralytic. Dr. Candler's observations were of very great interest; they were careful and painstaking observations, and he looked forward with interest to their publication. With regard to finding the bacilli in other patients besides those suffering from general paralysis, it must be remembered not only that diphtheroid organisms were very common on mucous surfaces, but that those other patients were contacts. He had read the paper by Stanziale, who found diphtheroid bacilli in the urinary tract in control cases and in patients in his skin clinique at Naples; but that observation did not disprove any of their contentions. They had themselves pointed out that diphtheroid bacilli could be isolated from this tract in some control cases. Such organisms might be devoid of virulence, and even if virulent they were not necessarily invading the patient. They did not attach importance to the mere presence of the organism. The remarks of Dr. Orr were very gratifying, because he and Dr. Rows had been in this country the pioneers in the experimental investigation of these lymphogenous bacterial invasions, and the work of Dr. McRae and himself was tending more and more to prove that in general paralysis there was such lymphogenous invasion. There was no man whom he (Dr. Robertson) had greater respect for than Dr. Mercier, and he was sorry to come into conflict with him.

Dr. Mercier said the organism must be identifiable, and their reply was, that it was so. They had obtained two varieties, which had special broth reactions and which produced paresis in rats, and until someone showed there were fallacies in them these observations must stand. He thought Dr. Mercier was in error in saying that the bacillus must be found in every case. Sometimes the organism was difficult to find; but if it were missed in one place it might be present in another. It was too much to ask that it must be found in every case. Dr. Mercier also said the organism must not be found in any case which was not one of general paralysis, but on that ground one would have to deny the specificity of the true diphtheria bacillus, because it was found in many healthy people. Importance was not attached to mere presence, but to invasion. He was much gratified by the remarks of Dr. Savage and Dr. Urquhart, and thanked the President for his sympathetic appreciation of their work. Many points in regard to their work were not included in the paper, but he thought that if some of those who had spoken had seen their charts showing the specific reactions with anti-sera, they would have hesitated to make some of their criticisms. He was very glad the discussion had taken place; it had been very gratifying to both Dr. McRae and himself.

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## Clinical Notes and Cases.

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*Study of a Case of Melancholic Folie Raisonnable.* By  
Dr. M. J. NOLAN, Resident Medical Superintendent,  
Down District Asylum, Downpatrick.

THE following case is of such a rare character, yet it is so perfectly true to type, and it presents such striking points of psychological interest, that its consideration is deemed noteworthy.

Briefly, the facts of the case are these: M. McI—, æt. 50, spinster, farmer, in easy circumstances, consulted me on several occasions as a private patient, and was eventually admitted to the Down District Asylum as a "paying patient" on August 17th, 1906. She is the ninth child of a family of eleven, two only surviving; her mother and eight brothers and sisters died of consumption; one brother exhibited unusual ability; became "too learned" and died of "exalted mania" (G. P.?).

When patient was eighteen years of age her father died very suddenly of heart disease. She had left him in the morning apparently in good health, and on returning home some hours later she found him "laid out for the wake" in his grave-clothes. The shock of this sad event "upset my nerves; I was never the same." She ceased to menstruate, and suffered from leucorrhœa, and later from retroflexion of the uterus. "Queer sensa-

tions" quickly developed. They were of a subjective kind associated with her cerebro-spinal system; they lasted all through her life. Towards the early climacteric she had much discomfort from flushings, headache, backache, and intermittent insomnia. When the menses ceased her condition became more pronouncedly miserable, a neuralgic pain ran "from the back of the head to the back passage"; she became altogether "out of sorts," she could not fix her attention long on anything, and she found it difficult to give her mind to the management of her farm, which, by this time, was solely on her hands. The insomnia became more persistent, and during the night and day she was disturbed by vague apprehensions, which for some time assumed no definite shape. Later, when in the fields, she became unduly anxious about the farm stock, and was obliged to frequently count the sheep and cows to fix their numbers. Later still, she became doubtful as to the identity of the animals, and constantly examined them lest any one of them should belong to her neighbours. This feeling of doubt as to her rightful possession by degrees extended itself so as to embrace all domestic articles, and even her employees. When everything and everyone in the home circle were included it projected itself to outside matters and individuals—in fact, every object, animate and inanimate, became involved in the workings of her morbid psychical state. Walking on the road she wondered "why?" the stones were left in heaps by the wayside; she feared they would cause a fatal accident; she was obliged to retrace her steps to see for herself what casualty might have resulted. Meeting a child she was obliged to ask its name, lest it should be lost, or to fix its identity if it should meet, as she feared it might, with some untoward fate. Gradually these doubts increased as to the degree of her personal implication and responsibility in the misfortunes concerned—she feared she had caused, in some strange way, the death or illness of such children or persons as she had passed by. Water in quantity, whether brook, river, lakelet, or sea, at first suggested someone's death by drowning; later this water gave her the idea that, in a mysterious way incomprehensible to herself, she was the cause of the imagined death, and, where possible, she took steps to reassure herself that there was no visible corpse. Yet, all through this period of intense anxiety, she remained perfectly strong in her

consciousness of innocence, and keenly alive to the preposterous absurdity of her notions. Meanwhile her relations towards her neighbours remained unaffected. She preserved her mental capacity to manage her affairs, but could not at all times personally superintend them. She constantly consulted physicians respecting her ailment. Getting no marked relief, she wished for asylum treatment, fearing her miserable state of doubt and apprehension might lead her to do some undefined harm. Prior to her admission she had been some months in a private hospital for nervous diseases, and had been treated by electric baths and massage, but with no good results. On her admission she met the clerk casually in the hall, and for some days later she was in distress, lest her meeting with him had caused harm to befall him. She also says that she imagines she is eating human flesh when she is eating bread or meat, and that she is afraid to go to the water-closet lest she might find in it a child she had recently seen. She says "such imaginations are ridiculous." She is afraid to knit or sew lest the needles should get into the food and be swallowed by someone. She is afraid to walk lest she should tramp some one of those about her underfoot. "What queer and silly notions!" she exclaims.

It is now some three months since her admission, and, so far, she has improved mentally and physically. She admits she is a shade better, and, though suffering from the "silliest notions" (particularly in the morning), she is not so miserable, as they wear off when she collects confirmatory evidence during the day that her fears are, "as I know in my real self," absurd and groundless. For instance, if in the morning on looking through a window, she sees a woman spreading clothes in the laundry yard, she "has a silly notion" that the woman may be drawn up through the radiator or ventilator; later she sees the woman at meals and feels reassured. If, however, she sees a visitor on the avenue, she has "the same silly notion" respecting her, and it persists longer, as she does not see the person again. The screams of the sea-gulls and the cawing of the crows she often imagines are the shrieks of children; at the same time, she knows the utter absurdity of such an idea. As the day wears along she becomes more and more reassured on all such points, until at length, at bedtime, she is able to regard her "wild imaginations" with a sense of ridicule. She



goes to bed smiling at the vain fears of the day; she sleeps well and without dreams, but only to awake to fresh terrors and doubts, which are started by the first incident of the morning. Withal, she preserves a kindly and sympathetic attitude to those about her, she feels for the sufferings of the acutely insane, she recognises the insane hallucinations and delusions of her fellow-patients, she thanks God frequently that He has left her "sound senses," but she says that there is no suffering so great as the "pain of mind," and the agony of the "cruel tricks played on me by my imaginations." Her natural disposition is in no way perverted—she is truthful, good-natured, pleasing, and sociable—and in all her conduct and manner exercises a naturally bright intelligence, overshadowed now and again, it is true, by the grief arising from the grotesque and painful imaginations, which, though they partially overshadow her rational judgment, do not completely eclipse it at any time. With regard to the "*delire du toucher*" usually involved in this disorder, so far as the symptom is immediately concerned in this case, the desire is limited to certain inanimate things, which, she imagines, may possibly conceal some victim; for instance, the notion that the body of a child she had met may be under an object makes it imperative on her to touch the object to dispel her "absurd notion." In a general way it may be said this symptom, in her case, has assumed a negative phase, since she hesitates to touch persons or things lest her doing so may result in evil consequence to those with whom she might come in contact.

In bringing forward this case under its present title I feel some apology is due to those who entertain and express a distinct antagonism to the differentiation of species in the groups of mental diseases. Such an attitude is one, I find, that is most difficult, nay, impossible, to understand, since in the accurate study of every branch of science the minutest attention to specific detail is deemed a *sine quâ non*. In general medicine, the term "fever" covers "variola"; the latter, however, conveys a very special idea of the disease in question. Moreover, we have still such a term as *variola sine eruptione* to describe a remarkable sub-variety. The term "amaurosis" does not convey any suggestion of the nature of hereditary optic atrophy. In like manner the term "melancholia," though it embraces such a case as that now recorded, does not stamp

it as a clinical entity as clearly as does the well-considered title, *melancholic folie raisonnante* (Krafft-Ebing). At the same time it is evident that exception may very properly be taken to the multiplication of synonyms which have arisen from symptomatological nomenclature; these synonyms are far too redundant, and create confusion.

So far, however, as title goes, the case now considered might be correctly enough classed under any one of the following clinical species, which are all more or less akin, in many cases the differences being due, not to the nature of the mental operations, but to the individual mental acquirements of the persons affected: Chronic hypertrophy of the attention (Ribot), cerebral pruritus (Ball), *folie du doute avec delire du toucher* (Legrand du Saulle), *grubelschut* (Oscar Berger), *monomanie raisonnante* (Esquirol), *monomanie avec conscience* (Baillarger), neurosis of anguish (Freud and Hecker), obsessive panophobia (Bianchi), systematised anxiety (Pitres and Regis); *alienation partielle* (Falret Jules).

With diligence it would be possible to extend this list, but as it stands it serves its purpose. Exception may be taken to the inclusion of *grubelschut* in the foregoing list, since the term applies a condition of inquiry, not with the spirit of enlarging the mind, but rather to gratify its trivial curiosity. The latter motive is far removed from that which actuates the inquiry in the present case, where the investigations are made the subject of life and death, and involve the happiness of the investigator. If, however, the term be taken to indicate pathological inquiry without reference to the cause or nature of the matters examined into, it may be permitted to stand. It has been suggested by Dr. B. Ball that *la maladie du doute* (the name given by Falret's patient to the disease) is the least open to criticism, since doubt is the most constant feature in all allied cases. With this I cannot fall into accord, since doubt may be, and sometimes is, altogether absent in some cases. Personally, if I may presume to express an opinion on the subject, I should incline to the view that all such conditions as involve a derangement of the normal mental processes, and which involve concepts, judgment, and imagination, should be treated as a class apart, when such pathological conditions are associated with a *painful consciousness of their morbid existence in the mind of the sufferer*. For such conditions the term *melancholic folie raisonnante* seems fairly ade-

quate, since it implies a fundamental melancholia based on a morbid method of exercising judgment—a method in which the suspension of judgment is unduly and painfully protracted. That the title is not completely adequate is obvious, since it takes no account of the consciousness of the infirmity—the doubt which gives rise to such painful feelings. Underlying this condition of doubt, which is so prominent a feature, we have the operation of the imagination, which raises in the mind the certain diverse conditions which call the judgment into play. The patient does not debate within herself the question of her innocence or culpability with regard to external objects or persons, until, long subsequent to her first perception, she feels she is accused of guilt, and realises that the accusation is a product of her morbid state.

But “to classify is not, in itself, the end and aim of psychiatry,” to quote Dr. Farrar, when he urged the biologic method of investigation: “a method,” he says, “which studies personality first, and disease second, and not despairing of the ultimate futility of absolute clinical differentiation, it turns rather to the minute analysis of the perverted functions of the individual minds, comparing them with each other, point by point, both in health and disease; under the influence of this conception whatever further growths the symptomatologic and clinical methods are capable of will proceed to the best advantage.”

The life history of this patient is typically classical. Like all the recorded women sufferers from this disease, she has a family history of neurotic taint, she is of comfortable pecuniary circumstances, a private patient, and of more than the average intelligence and education of her class. She suffered from a severe shock at a critical epoch of her life; her general health was affected, and she became the victim of chronic uterine trouble. At the climacteric her condition became aggravated, and the course of her disease, though of steady evolution, was not such as to complicate her relation to her surroundings; the inner workings of her mind, up to quite recently, did not openly colour, though they may have embarrassed, her ordinary conduct.

It is interesting to attempt to follow the line of mental operations in this case. To begin with, it must be noted that every distressing thought at the onset was based on the normal

perception of some object or person. The retina received the normal impression which excites the psychological functions to abnormal action. Such complex conditions of mind as those involved demand something more than passing mention. It is not, however, possible here to follow the thinking process through the devious and hypothetical ways ascribed to it by psychologists of conflicting views. I venture, therefore, to treat the analysis of the case by what seems to me a fairly clear working method, which fits in with the life-history of the patient, and at the same time depends only on authoritative statements for its support and acceptance.

At the onset of the disorder we have to deal with a girl of neurotic taint plunged at the period of adolescence into a stage in which the antecedent symptoms of melancholia—"lowness of spirit, groundless forebodings of coming evil, and brooding abstraction" (Maudsley)—were one and all manifest. When roused to interest in her surroundings her first obvious definite doubt was excited by seeing the cattle. There was no error in her visual perception—she saw ordinary cattle in the ordinary way. But, as Mercier points out, visual "perception, which is often, and not incorrectly, looked upon as one of the simplest of mental operations, is, in fact, a very complex process, including sensation, memory, attention, and in the region of thought, all the forms of syncretism, as well as immediate inference. When perception is defective or erroneous any of these elements may be at fault, or may rest unequally among them."

Here, then, we have at once several mental processes bound together, any one or more of which may have been the weak link in the chain of reasonable conception; and in the latter concrete outcome of received ideas we have its constituents—belief, imagination, and understanding. Taking Bain's amended definition of belief to be a primitive disposition to follow out any sequence that has been once expressed, and to expect the result (in this instance the counting of the cattle), it is a fact, or an incident, of our intellectual nature, although dependent as to its energy upon our active and emotional tendencies. It is evident there was a failure in the belief process since the reckoning of the animals was inconclusive and had to be repeated. This repetition showed the existence of doubt, and, as Kirchner holds, "the more a creature can doubt,



the more conscious it is"; hence the phase of doubt, with its ally fear, created a condition of acute attention to discrimination between the two ideas, for "doubt requires at least two, and, in addition, a creature which transcends both." The repeated sensory impressions of cattle in number stimulate the sensuous imagination, and by suggested contrast, the doubt extends itself from the question as to the number of her cattle to the question of ownership. As in all cases of imagination, understanding (in its limited sense as "the capacity of thought, which proceeding from what is given aspires to positive knowledge by its own logical laws") now acts as a limiting force and stops the doubt at the threshold of delusion. Later, in matters of great import, "doubt is the name for unspeakable misery" (Bain), but so far the simultaneity of thought is normal, and the queries, all of a minor character, are answered to her satisfaction and dismissed. As we have seen, however, time serves to increase the nature of the doubts, and all the mental processes above noted are called into play, no longer for the mere solution of mathematical problems, but to extricate her from the meshes of self-accusation, which her imagination nets round her. As in a dream the ego is, as it were, broken into a plurality, and a condition of anxious confusion ensues—"Qui s'excuse, s'accuse"—she is forced to explain away auto-accusations. Elementary recognition, though still normal, is followed by contemporaneous ideas of a heterogeneous character. The mental operations arising from commonplace, normal, visual perceptions result in bizarre and morbid feelings. Apperception, taking that quality to express "the process by which a mental system appropriates a new element, or otherwise receives a fresh determination" (Stout), is possibly at fault. That the fresh "determination" is not always in the right direction may arise from cases of association by contiguity, and resemblance is indicated by Plato (Phaedo)—"For we saw that this was possible; that when perceiving something, whether by sight or hearing, or any other kind of sense, one may from this perception, get a suggestion from something else which one had forgotten, to which the first mentioned was contiguous, though unlike, or to which it was like." In this patient's case it would seem as if there was a failure of apperception—the morbid suggestions evoked by perceiving normal objects are morbid suggestions

drawn from contiguity and resemblance—they are not the normal suggestions which should be associated with the visual images *per se*. At this stage new elements come into play, the patient recognises the failure of her mental power to deduce normal rational suggestions from the external stimulus, and she seeks to correct the false impressions by judgment. Normally, judgment or reason acts promptly, it “inhibits.” In her case both the conditions requiring rational adjustment being presented by her own consciousness, the judgment state is abnormally slow and painful, there is a strain and stress on the reasoning faculties. She now affords a fairly good illustration of the analysis of self as made by Ward: she has “*the bodily self*,” “*the inner self*,” and “*the self as person*.” The perceptions of the bodily self are normal; the inner self is evidenced in abnormal emotional disturbance; and self as person indulges in a reciprocal recognition in which the not-self becomes a second self with a correspondingly apperceptive group. There is a sense of guilt, which entails a long and painful introspective analysis, and which is thrown off only when the weight of internal and external evidence result in the tardy verdict, which leans rather to “non proven” than to “not guilty”! She is at once her own accuser, defender, and judge. She holds the scales of justice, blindfolded by the consciousness that she is the victim of her own deception, and though she feels she shall free herself from the self-made charge, she is suffering the penalty of a painful and humiliating ordeal. Such a complex condition of mind demands a close examination. The elements involved do not work in harmony—there is a distinct disequilibrium between the actual visual perception and the abstract psychical sentiments thereby elicited. There is, indeed, more than mere disequilibrium—there is a very gross incongruity which unfortunately is painful to the ego concerned, inasmuch as it creates, as it were, a bogus case against itself, and is forced to adjudicate on the same case, weighing the issue in as impersonal a manner as is possible under such Gilbertian conditions. Visual images of inconsequent persons and neutral objects give rise to a sense of self-accusation. A morbid sense of ill-doing must deeply underlie this person’s normal everyday commonplace sentiments, which are of a good and kindly nature; and in the rejection of the imputations suggested by the inner ego these latter sentiments are excited to a degree

which demonstrates their very altruistic character, since the anxiety is much more to prove others unharmed than herself innocent. Far down in her inner consciousness are stored away the inexhaustible tissue of charges from the very mention of which she shrinks, and the strange natures of which excite her own wonderment, indignation, and, at times by their very absurdity, her sense of humour. So wide apart are the concurrent sentiments that they might be said to differentiate a double ego. We have synchronous ideas, and yet ideas so discordant that, were the ideation not complementary, the condition of double-consciousness might be said to be present. As it were, we have strongly conflicting and definitely defined ideation of an antagonistic type. The battle is fought by the same divided ego, on the same psychical ground, and though the victory is to the strong in each encounter yet it is truly Pyrrhic; delusion is routed, but illusion and obsession hold the ground.

Delusion is an erroneous belief, the patient not only does not believe in the reality of her "imaginings," but she repudiates and controverts them; hence she is not delusional. But some of her imaginings are so crystallised that they have become obsessions, "they enforce the doing of acts foreign to the acting individual." It is evident that there is a psychical state which may be classed as one of micropsychosis, since it is complicated by uncontrollable thoughts, which are not unlike those wherein the dreamer sees himself, as it were, in detachment from his acts in the dreams. In this condition of micropsychosis the thoughts are controlled by sight, inasmuch as the sights are necessary to elicit the thoughts, though the secondary thoughts so elicited are subsequently controlled by the primary and rational thoughts. At this stage the mental operations are so intricate that disentanglement is practically impossible. The concurrent thoughts are hostile to each other and reflect each other in repetition, as in opposed mirrors. There is, as Professor Boyce puts it, writing of anomalies of self-consciousness, "a primary alternating of passing consciousness such as dimly suggest anomalous situations," and the suggestions are readily assimilated. A very insignificant remote event now causes grave results. One evening, years ago, when walking, she accidentally trod on a snail and partially crushed it; after she had passed on a considerable distance she was

obliged to retrace her steps to ascertain if she had caused its death. Henceforth her accidental contact with people suggested their suffering in consequence. If she were present at a "wake" she was obliged to get repeated accounts of the last illness of the deceased in order to dismiss a vague idea that she had anything to do with the fatality. Her consciousness constantly arraigned her and forced her to prove an *alibi*. This doubt remained in the penumbra of her consciousness—"the peripherally originating spectra of memory" gave rise to illusions of introspection, excited the recognised confusion of internal and external experience—and established the sub-conscious process of criticism now so prominent a feature in the case.

Experience, moreover, as Maudsley points out, has established the fact that "the primary occasion of an hallucination or an illusion may be either in the subordinate sensory ganglia, or in the super-ordinate centres which minister to ideas; and, *secondly, although sensory and ideational centres are commonly in a conspiracy to produce it, yet they sometimes do not agree, the one contradicting and convicting the other.*"

The mental derangement in this case, then, may be classed as a disorder of judgment—there is a disintegration of the necessary unification which is essential to normal judgment—"the personal identity is confused, uncertain, and ambiguous."

To sum up. The patient, it will be admitted, is an excellent illustration of the condition "in which the personality does not undergo any transformation further than the afflicted tone that arises from the tormenting despotism of ideas and emotions that are recognised to be irrational, and of the inefficiency of struggle for freedom from these." The obsessions are also remarkable for their altruistic type—her systematised anxiety is less of apprehension as to her own well-being than regard for the welfare of others. Throughout there is a marked absence of spiritual doubt or despondency, though her suffering is so great "that life is without joy," and "death would be hailed a relief," yet there is no disposition to self-destruction. There are, at times, paroxysms of distress, which may be regarded as "neurosis of anguish." Of late there has been a chronic inability to personally administer her affairs, somewhat analogous to the condition of "professional dyskineses." There is no evidence of insane delusion in the sense of erroneous



belief; there is no evidence of hallucination of any special sense, though possibly there may exist some of a psycho-visual character, when the obsessive panophobia is at its maximum, and excessive emotivity causes acute confusion. It cannot be determined that she has any visual illusions; she sees all objects in their true conformation, and in proper relation to their surroundings.

Just one word as to prognosis and treatment. It cannot be expected reasonably that a condition which is the matured result of a life habit can be overthrown at once, and hence we find that the authorities generally incline to a pessimistic view. There are recorded experiences, however, which point in the reverse direction and stimulate hope. The case now under care shows a tendency to the latter class. This brings us to the treatment which, besides general tonic measures to improve health (and more particularly the nervous system), embraces in asylum life a comparatively limited environment where the exciting causes of anxiety are reduced to a minimum, and are of such a fixed character that time is afforded for the removal of the doubts indirectly inspired by them. The patient's field of psychical vision is, as it were, restricted to a landscape with some certain figures, whereas in the outer world the patient was forced to gaze at an ever-moving panorama where crowds made their entrances and exits in quick succession, creating confusion and doubt by their rapid passage. Possibly it is not in such rare cases as this alone that the monotony of asylum life becomes a restful curative measure. There is at all events a minimum of the irritation calculated to excite "cerebral pruritus" in such cases as this now recorded.

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*A Case of Sclerosis of the Cerebellum.* By HARVEY BAIRD, M.D.Edin., Assistant Medical Officer, London County Asylum, Colney Hatch.

A MALE imbecile was admitted to Leavesden Asylum in June, 1883. He was then æt. 16, and appeared undersized. He had very little memory or reasoning power, but was clean in habits, and worked outdoors. His mental state remained the same until his death in June, 1904. His speech was stammering, thick, and unintelligible on admission, and remained so. He was not epileptic. He died of phthisis. There is no record of any peculiarity of gait, nor was any such observed by those in charge of him.

At the autopsy the following facts were noted: The skull-cap and dura were normal, as was the pia, except over the cerebellum. The cerebrum was symmetrical, the convolutions of the usual type; with cerebellum it weighed 46 oz. The cerebellum was small and very firm; it weighed  $2\frac{3}{4}$  oz. Naked-eye examination revealed the vallecule to be much more prominent than usual. The amygdalæ were simply small projections, slightly raised from the adjoining bi-ventral lobes. The inferior vermiform process was completely exposed in all its length without lifting the medulla. On raising the latter all the fourth ventricle was very easily seen. On either side was a marked loss of tissue in the bi-ventral lobes. Instead of the usual rounded appearance of the inferior aspect there was a sharp ridge running round outwards and forwards from the notch, so that each lobe became a wedge with apex downwards.

On section each lamina was seen to consist almost entirely of sclerosed tissue, the outer and granular layers being much reduced in thickness, the outer layer being about a fourth, the granular layer a third, of the normal thickness. The cells in the granular layer were not nearly so crowded as in the normal cerebellum. The proportion of rounded cells to granular cells was considerably diminished. Purkinje's cells were absent, no cells in any way resembling them being seen. The sclerosed tissue in the interior of the lamina was much wider than the white matter normally is, thereby causing the width of the lamina, as a whole, to be not much less than the normal. At places the tissue was very dense, at others fairly loose. It consisted of glia cells and nuclei, and a network of fibrils. Numerous blood-vessels were seen. The cells of the dentate nucleus were much atrophied. There was great thickening of the pia, causing the laminae to adhere together in many instances. This meningitis was evidently the primary cause of the sclerosis. Microscopically no lesions were found in the cerebral hemispheres or in the cord, but in the medulla the cells of the olive were diminished in number and size.

The case is of interest as showing the possibility of gross cerebellar disease existing for many years with no special symptoms pointing to the involvement of that organ. The literature on cerebellar lesions is fairly extensive, but principally refers to cases of tumour, or of experimental lesion in animals. It is obvious that little can be gained by comparing the above case to these. During the years the lesion has existed there has been ample time for other portions of the central nervous system to assume the functions of the diseased part. Further, the nature of the lesion precludes the possibility of the production of any irritation symptoms, as in tumour.

Several cases of cerebellar sclerosis or atrophy have been described, associated with lesions of the opposite half of the cerebrum.

Thus, Major (1) recorded a case of left cerebral sclerosis asso-

ciated with atrophy of the right lobe of the cerebellum. Dudley (2) reported a case of an old hæmorrhagic cavity with dense sclerous walls, implicating the corpus dentatum, accompanied by degeneration of the opposite olive. Grills (3) recently described a case of cerebral hemiatrophy with atrophy of the right side of the cerebellum. The left olivary body and anterior pyramid were about one-third that of the right. The cord was normal. The case most similar to the above, however, that the writer has had access to, is that reported by Bond (4). The condition was one of atrophy and sclerosis of the cerebellum. The naked-eye appearance, weight, and consistence were similar. The case was of long duration, the mental state also imbecility without epilepsy, and there was speech defect. The cells of the medulla, especially the olive, were small, degenerate, and of indistinct outline. It differed inasmuch as that the patient became ataxic, the meningitis was only slight, and there was some sclerosis of the pons.

The slight nature of the pathological changes in other parts of the central nervous system is noteworthy.

It would appear that compensation of function is comparatively easily obtained in cerebellar lesions, and that localising symptoms need only be expected if the lesion be recent or cause pressure effects.

#### BIBLIOGRAPHY.

- (1) Major, *Journal of Mental Science*, July, 1879.
- (2) Dudley, *Journal of Mental Science*, July, 1886.
- (3) Grills, *British Medical Journal*, May 5th, 1906.
- (4) Bond, *Journal of Mental Science*, July, 1895.

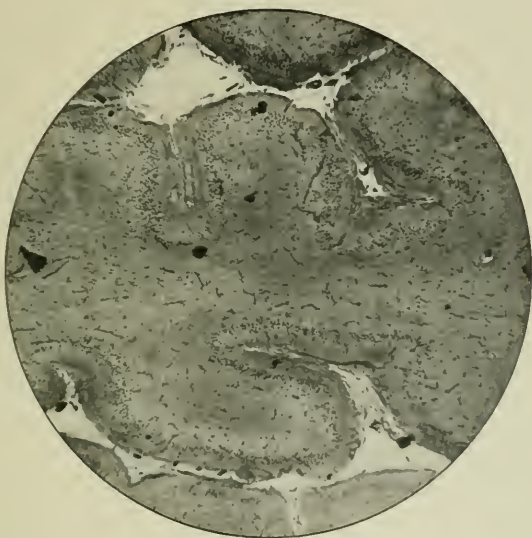
#### MICRO-PHOTOGRAPH.

Micro-photograph of section stained with hæmatoxylin. Note the meningitis and adhesion of the laminae, the small number of cells in the outer and granular layers, the absence of Purkinje's cells, and the large amount of sclerosis.

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*Notes on a Case where a large number of Foreign Bodies were removed from the Vagina of a Chronic Insane Indian patient.* By A. D. PRINGLE, M.B., Senior Assistant Medical Officer of the Natal Government Asylum, Maritzburg.

PATIENT P—, Indian female, æt. about 46, admitted April 5th, 1899, stated to have been insane eighteen months previous to her admission.



To illustrate Dr. HARVEY BAIRD's paper.





She had a child with her about one year old, and treated it kindly. Since her admission no husband or relative has taken any interest in her or her child, and one is led to the conclusion that her life had been a somewhat irregular one.

On admission she was acutely maniacal; she is now quarrelsome, abusive, and extremely dirty in her habits, fighting pretty frequently with other turbulent inmates.

At intervals she has gone out with the coloured female squad to do garden-weeding, etc., but appears to have given more moral (!) support than practical help. In April, 1905, she developed an abscess high up on the thigh in front; it was offensive and healed after the expiration of about three months.

In December, 1906, in spite of frequent bathing, it was noticed that a most offensive odour constantly hung about the patient. Slight vaginal discharge was seen, and orders were given for douching. After a few days the nurse in charge reported difficulty in inserting the nozzle of the douche, and a vaginal examination was made (December 28th). On separating the labia one could just see a piece of old spring wire projecting, much like a decayed pessary. It was removed, but it was quite evident there was something more to come. As item after item was brought out, one could not help being reminded of the miscellaneous collection seen in a watch-maker's or machinist's workshop.

The following is a list: Parts of three watch chains, eight metal washers, three dozen beads, five cogged watch-spring wheels, two iron nuts, two brass ornaments, twenty-eight thick brass finger-rings, two large silver ear-rings the size of a large walnut, two brooches, two brace-buckles, bowl of salt-spoon, steel spring, small bolt, bath-plug and part of chain, eleven buttons, one toy watch, two pennies, one half-penny, one tie-clip, pipecover, metal screwtop, metal cork, two large belt-buckles, buckle of rifle-sling, top of safety key to bath, piece of 1 in. square glass, parts of several iron screws, bolts, and miscellaneous pieces of rusted iron, beads, hooks-and-eyes, etc.

After about fifty washings the total scrap heap weighed seventeen ounces, and I calculate that the vagina must have contained nearly one and a half pounds of foreign matter.

The operation lasted almost an hour and a half, some of the articles being more or less firmly imbedded in the vaginal wall, which was fibrous and apparently papillated where parts of the mucous membrane had been pushed into the chinks and openings in the pieces of metal. No chloroform was given, although I am confident it would have been necessary in a sane woman, as some of the watch-wheels, buckles, etc., were removed with much difficulty. Every ten minutes the douche (potassium permanganate solution) was inserted to wash away the *débris*, and an offensive, black, slimy liquid that oozed out in the intervals between douching. Most of the articles were in the posterior fornix (towards Douglas's pouch), which had stretched to form a large *cul-de-sac*. No bleeding took place, neither were there any fissures communicating with the bladder or rectum. How the last escaped is a marvel, since the wall between the rectum and vagina was much thinned out, and many sharp pieces of glass, wire, and metal were removed.

For four days after this the discharge still continued to be black and

offensive, evidently remains of *débris*. Pulse and temperature remained normal throughout.

The patient is now well, but much annoyed at losing her "hidden treasure," and not having opportunity for further collection resorts to secreting bread in the same place when she is not watched.

Looking through the *Journal of Mental Science* for the last sixteen years I can find no trace of any other cases excepting one recorded in July, 1895, by Dr. Russell Strapp (now practising in Maritzburg) while assistant medical officer at the Inverness District Asylum. In this instance a female patient had inserted a candle extinguisher and a small round brass ball. All asylum physicians are aware of the anæsthesia found in the insane; I have no doubt, however, that most of my readers, if they saw the collection, would wonder how the patient could possibly have retained such a quantity of miscellaneous articles without incurring any fissure or internal septic complication of some kind. The case naturally suggests sexual perversion, but although the patient had apparently led a vagrant life before admission, nothing has been noted by the attendants in charge beyond the secretion of foreign bodies. However, it is difficult to trace matters among the insane coloured inmates. One other factor may have been "hoarding up of rubbish and brightly coloured objects," common in asylums.

When the coloured patients are bathed, usually all rubbish is taken away; it is therefore possible that this patient may have secreted these articles in her vagina for greater security.

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## Occasional Notes.

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### *The Thaw Trial.*

The Thaw trial so strikingly demonstrates the existence of defects in the conduct of judicial inquiries, some of which directly affect alienists, that some comment on them is not out of place in the pages of this *Journal*. These defects, although more prominent in the American, can be seen in lesser degree in English courts.

The most disgraceful defect is the prolongation of the trial

which wealth permits. The penniless murderer of Whiteley is tried and sentenced in a few hours, whilst the millionaire Thaw occupies the courts for weeks and months, with a lavish expenditure of funds that is demoralising to lawyers and witnesses alike. The rich and the poor are certainly not on an equality under these conditions. Yet the equality of the poor and the rich is one of the proudest boasts of that free and incorruptible justice which is so dear to the Anglo-Saxon race.

The unreliability of trial by jury is most unwisely exposed. The weeks occupied in empanelling the Thaw jury constitute a scandal, and the bases of objection to the scores of rejected jurymen are not calculated to make jury service popular, or to obtain the best men. Every man who wished to evade service could do so, leaving the jury to be composed of those who for some motive wished to serve. This is not in accord with the principle of taking the first twelve good men and true on the roster, and trusting to their common-sense judgment on the facts submitted to them, quite apart from anything they may have heard, or any uninformed opinion they may have expressed. Indeed, it is hard to see how the most bigoted defender of the palladium of our liberties can find anything to say in favour of the selection of the Thaw jury. A crowd of pot-boys tossing pence in a tavern would have selected the arbiters of life and death on more ancient, just, and logical principles.

The multiplicity of heavily subsidised legal advocates, tending to the introduction of all kinds of irrelevant evidence, the extreme latitude of cross-examination and the exclusion of real evidence on technical pleas tend to the confusion of the issues and the excitation of emotions and prejudices, which so often lead to a disagreement of the jury.

The introduction of battalions of "specialist" witnesses, on either side, giving evidence in terms usually unintelligible to the jury, and often unintelligible to anybody, tends to the same result.

The effects on the "specialists" need not be commented on; they were well described by our American correspondent in our last issue, and we agree that they are certainly not desirable.

Much of the evil resulting from such trials as the one under consideration arises from the fact that two distinct issues are



being tried at the same time. The main issue—did the accused commit the criminal act?—is within the province of a common jury, if honestly selected, but the second is not. An ordinary jury is certainly not competent to decide whether a man was insane at the time of the committal of a crime, or at any other time, except in the most obvious instances. In all cases in which there is any shadow of doubt the question should be relegated to a jury of experts, nominated by the judge. Our judicial procedure gives a precedent for this in the jury of matrons. This would avoid the conflicting testimony of experts so humiliating to our profession, and would avoid that very unsatisfactory procedure by which one or two experts appointed by the Home Office revise the decision of the jury at a later stage. This latter arrangement does not, and should not, command the confidence of the public. These specialists practically decide the question of life or death in a manner that is directly opposed to the principle and practice of our legal procedure—by avoiding all publicity. That their overruling of the judge and jury is commonly correct may be true, but circumstances are conceivable in which this procedure might be abused. In any case this mode of settling an important judicial decision by a secret medical report to a Home Secretary, who, being a politician, is probably not judicially minded, is a very halting method of arriving at justice.

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#### *The Registration of Asylum-trained Nurses.*

The appeal to the Medico-Psychological Association to support the petition on behalf of asylum-trained nurses has been most thoroughly successful.

The petition has been signed by more than 7000 persons, and is a record that cannot be ignored in any legislation on this subject.

Two bills are before the House, but it is very improbable that either of them will be passed in the present session; and, as before pointed out, it is very doubtful if registration will ever be carried. In any case this Association can claim to have supported the interests of asylum-trained nurses with promptitude and vigour.

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*Lombroso and Spiritualism.*

Professor Lombroso has publicly acknowledged beliefs in the existence of psycho-physical powers beyond those hitherto recognised by science. Honour is due to him for this public profession, and for the opportunity it gives of examining some of the data on which his beliefs are founded.

The beliefs of a man of great mental activity, whose repute is world-wide from his views on criminology, certainly demand consideration in connection with a subject which is so largely attracting public attention at the present moment.

Professor Lombroso's beliefs were primarily founded on some *séances* with an Italian medium named Eusepia Paludino, but in the *New York Medico-Legal Journal* (September, 1906), the Professor gives an account of some investigations of "haunted" houses. Three cases are reported. In the first the phenomena, after existing two or three months, ceased on the removal by marriage of a young woman of twenty-one. She produced no new phenomena in her new domicile.

Professor Lombroso saw no phenomena himself in this case, but obtained written statements from several persons who did, but not from the young woman herself, thus making the investigation in regard to facts which occurred ten years before singularly unconvincing. The principal phenomena reported were the loud ringing of a bell, after being filled with "lime and tow," the repeated falling of a Bersagliere hat, even after being nailed up, and the falling of water, to the extent of a tumblerful in a room where no water was.

In the second case the phenomena ceased when a boy was sent away. Lombroso himself witnessed the chief phenomena here—*viz.*, the falling of bottles from shelves in the cellar of a wine and spirit store when the boy was not present. The owners of the spirit store asserted that they had seen things disappear before their eyes. No note is made of the boy's health, age, condition, or after-history.

In the third case, also investigated personally by Lombroso, a child of eight, on going to bed, is supposed to have caused knockings on the wall so forcible that the "vibration was very perceptible." These continued when the child was removed to the opposite side of the room. There does not appear to have been any examination of the other side of the wall. The

knockings were intelligent, answering verbal questions on a code, "in which the letters of the alphabet were denoted by blows. Some of the things thus communicated were correct, some incorrect, and others inconclusive."

After a quarter of an hour the boy fell asleep, the blows became more inconclusive, and finally ceased. The blows were less resounding when the boy was ill of "grippe." The boy presented no abnormal peculiarity, and it is not stated whether his intelligence was equal to the information displayed in the conversation carried on by knocks. Whether his mediumistic powers continue is not stated.

It is to be regretted that these two mediumistic boys were not more thoroughly studied. If isolated for a few days from the scenes of their activity the continuance of their powers would have been absolutely convincing, if observed under strictly scientific conditions.

The absence of this continued observation renders these cases distinctly unsatisfactory.

These "phenomena," if we accept them as facts, would indicate that in two cases of immature brain-development, and in that of a young woman who was a rickety, sickly neurasthenic, a power was evolved which could, at a distance from these brains, be converted into mechanical force—moving bodies, inflicting blows, etc. This force, however, would not be, in all respects, ordinary force, since it could overcome resistance of intervening matter, as in the ringing of the packed bell, and could either overcome gravity by removing water through space into an empty room or produce it in a room where no water was. Whether the water was carried or created by this miracle-working force is about equally unbelievable.

This power or force, developed in immature or unhealthy brain-matter, even in sleep in one case, was not enhanced, but weakened by ill-health in the case of the child, and this, Lombroso asserts, is also the case with the "medium" Eusepia Paludino.

The tendency of modern publishing is to induce men who have attained any widespread notoriety, as scientists, writers, talkers, etc.—men who perhaps are really able, on some small branch of human knowledge, to set up as authorities, and lecture humanity on every subject under the sun. The public, that reads and never thinks, is only too ready to accept their

utterances as gospel, not appreciating that a man may have hypertrophy of some brain-areas and atrophy of others, just as an athlete with hypertrophic shoulder-muscles may be feeble on his legs.

Lombroso, however, certainly does not fall into this category, and we may be sure that if he discovers that he has been duped he will as frankly own to this as to his beliefs.

A course of training of some few months under a professor of legerdemain should be prescribed to all scientists before entering on an investigation of mediumistic *séances* and haunted houses, and probably the number of conversions after such a course would be considerably reduced.

Professor Lombroso's beliefs imply that the laws of the universe governing every known activity, from the falling of a drop of water to the guidance of the stars in their courses, are set aside and overruled by brain action of a defective type for the most ridiculously puerile and purposeless results. If the Creator could be imagined thus to stultify His omnipotence by giving man the power of overruling the laws governing the universe, such a power would surely manifest itself in the most highly-developed men, and for objects that would teach mankind some really great truths in regard to man's knowledge of the universe, which is the end and aim of all science.

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### *The Treatment of Insanity in Asylums.*

Medical critics, who have often an unseen axe to grind or an ancient grudge to gratify, are constantly ventilating in the public press or a medical journal the time-worn allegations of the want of scientific spirit in asylums.

One of these critics, in a recent contribution, begs the question as usual, in his opening paragraph, asserting that "in real medical treatment, directed to the causes, nature, and cure of insanity, very little has been done, very little is being done, and the methods found fertile in other fields are not being pursued," and he then goes on to explain why this is, from his point of view.

A critic who is so little acquainted with the medical literature of the day as to make the above assertion a basis of his contention, it may be argued, is too wanting in knowledge of his subject to need consideration.



An examination of his further utterances shows that he does possess some acquaintance with asylums, if even of somewhat remote date, and that his assumptions are not entirely due to mere want of information.

This critic is, or professes to be, ignorant of the work done by Drs. Bolton, Bruce, Campbell, Bevan Lewis, Mott, Orr, Ford Robertson, Rows, Turner, and a host of other workers, whose work is in evidence not only in this and all other medical journals, but in special archives, and occasionally in the *Reports of the Royal Society*; work, in fact, which in its originality, variety, and scientific method will compare favourably with the output of that produced by an equal number of medical men engaged in hospital practice. Indeed, if there are eliminated from the ranks of our specialty a large number of junior medical officers, who are mere birds of passage, it may be safely asserted that the contrast of scientific output would be in favour of the alienist in the public asylum.

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### *Pathology in Asylums.*

The criticisms on the scientific work of asylum medical officers suggest that to remove the ignorance which prevails in regard to the investigations being made in asylums, especially in pathological matters, there should be a closer connection between the asylums and universities or medical colleges in this respect.

The clinical opportunities offered by asylums for the teaching of a general knowledge of mental diseases are very generally made use of, but the pathological side is almost entirely neglected. The pathological laboratories in connection with asylums are numerous; some of them are admirably equipped, and conducted by men whose repute is well established in Continental and American scientific circles, even if unknown to, or ignored by, our home critics. Prophets, as usual, are not without honour away from home.

The teaching of the pathology of the brain, etc., is urgently needed, and the Medico-Psychological Association, which has been so successful in obtaining the recognition of the value of its clinical material, should now devote its energies to pressing on the universities and medical colleges the urgent necessity

for the teaching of brain pathology, by establishing lectures and demonstrations by asylum pathologists wherever this is possible.

The pathologists of our asylums would be greatly benefited and stimulated by such a connection with our teaching bodies. A lectureship in a university or medical college would be a great incentive, and would probably enable a certain proportion of them to make this work their life aim and occupation, instead of being, as it occasionally is, a stepping-stone to more lucrative positions, or, more frequently, a loss of time, so far as professional advancement is concerned, leading to the abandonment of the work by men who have obtained very valuable experience and achieved no inconsiderable success. Further, the establishment of such lectureships should form a very efficient means of enlisting the student's interest in the pathology of insanity at that stage of his career when he is inclined to emulate the enthusiasm of his teachers. This is greatly to be desired and would doubtless result in attracting a due proportion of the abler students to this special branch of medicine, and, eventually, in a great increase in the knowledge of it by the general body of the profession.

It is to be hoped, therefore, that the asylum pathological laboratories, of which we are so justly proud, should no longer be allowed to "waste their fragrance" on the English medical desert, as, judging from some criticisms, they now appear to do, but should be brought into prominence and usefulness by becoming associated with our professional teaching institutions.

The need is urgent, and there should be no delay in pressing on this matter. It is to be hoped that the annual meeting will not pass by without some effort being made by the Medico-Psychological Association to assert the claims of our pathologists and pathological laboratories.

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## Part II.—Reviews.

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*Das Sexualleben unserer Zeit [The Sexual Life of our Time].* By Dr. IWAN BLOCH. Berlin: Marcus, 1907. Pp. 822, 8vo. Price 12 m.

Dr. Bloch is widely known as the author of various able and learned works on various subjects in which history and medicine meet,

and more especially by the remarkable work, *Der Ursprung der Syphilis*, in which he has exhaustively discussed the evidence which seems to demonstrate the American origin of syphilis. This latest volume is, however, perhaps the most important work he has put forth, and certainly the most ambitious. It is designed as nothing less than "an encyclopædia of sexual science," and it is not easy to find any aspect of this many-sided subject which has here been neglected. One is tempted to compare Dr. Bloch's work with the scarcely less comprehensive work by Dr. Forel, *Der Sexuelle Frage* (now translated into French), which was briefly reviewed in the *Journal* last year. Such a comparison well brings out the essentially unlike character of the two books, although there is no very wide divergence of opinion on most of the main topics, and both writers place themselves at the point of view of modern science and culture. The marked individuality of each writer makes itself clearly felt. Forel, a man of strong and sometimes even somewhat extravagant independence, and pronounced personal moral convictions, relies mainly on his own practical experience and on his own intuitions; while these generally guide him aright, his indifference to the results of other workers and his disdain of the minutiae of exact research and scholarship sometimes lead him into error or eccentricity. Bloch, who is not only a physician but a patient and indefatigable scholar, tireless in research, perpetually testing his own work and modifying his results when modification seems necessary, approaches his task in a much more objective spirit. His erudition in respect to every department of his subject is amazing and prodigious, and scarcely less remarkable is his power of presenting it in a condensed and attractive form. Anyone who has mastered this book, it may be confidently said, not only possesses all the main results attained in this field up to date, but also has in his hands the necessary clues for further investigation.

The volume contains as many as thirty-three chapters, each discussing some separate important problem. The psychic and physical aspects of love are first considered, the secondary sexual characters in their relation to love, the woman question in the same connection, modesty, sexuality, and religion, individualisation in love. Then the author turns successively to free love, marriage, prostitution, venereal diseases, and the questions connected with the control of venereal disease; here Dr. Bloch is in his own special department, and writes in his most vigorous and illuminative manner. Formerly an adherent of the old view in favour of the official registration and regulation of brothels, he has now joined the increasing number of distinguished authorities who, following Blaschko, recognise the futility of all such attempts. But he approaches the problem of syphilis hopefully, as merely an episode of European civilisation, a drama in five acts, each lasting a century; we are now, he believes, at the beginning of the fifth act, and it is the task of the present century, working through medicine and hygiene in co-operation with social measures, to bring that drama to a conclusion.

Eight chapters are devoted to the chief forms of sexual perversion, special attention being given to the question of homo-sexuality. In former works the author adopted the now somewhat antiquated view that homo-sexuality is mainly acquired, but with his alert mind, ever

ready to modify his attitude with riper knowledge, he has now abandoned that position. During the last few years he has given special study to sexual inversion, investigating many cases, and has come to the conclusion that a very large number of such cases are congenital; he would, indeed, confine the term "homo-sexuality" to such congenital cases, and establish a separate group, under the heading of "pseudo-homo-sexuality," for acquired cases. With Magnus Hirschfeld, who undoubtedly has a wider acquaintance with sexual inversion than any other living authority, he believes there can no longer be any doubt that "homo-sexuality may be associated with complete mental and physical health." In regard to the very difficult question of the treatment of perversions, Bloch lays weight on personal influence through suggestion; actual hypnotism he is not enthusiastic about, but he considers that very much good is done to the patient even by mere intercourse with a wise physician experienced in such cases. A chapter is given to the question of sexual offences before the law, the conclusion being that these matters mainly concern medicine, and that the judge of the future in this field must be the physician. The last nine chapters are devoted to various miscellaneous subjects, the question of sexual abstinence, sexual hygiene, neo-Malthusianism, pornographic literature, etc.

The author has written a weighty, learned, comprehensive, and even brilliant treatise which cannot fail to be helpful and instructive even to those who have given most study to the subjects here discussed. Is it too much to hope that the book will some day be translated into English?

HAVELOCK ELLIS.

*Epilepsy: A Study of the Idiopathic Disease.* By WILLIAM ALDREN TURNER, M.D. Edin. London: Macmillan, 1907. 8vo. Pp. 272.

Dr. Aldren Turner has given us a well-arranged and carefully-thought-out study of idiopathic epilepsy. He has embodied in his book the views of all the principal authorities, and has also given his own personal observations, which have been deduced from 1000 cases which were under his care at the National Hospital for the Paralysed and Epileptic, and also at the Colony for Epileptics, Chalfont St. Peter. The book is written from a clinical standpoint, and all the different features of the disease are well brought out and placed under definite headings in such a way as to make it an excellent book for consultation.

The first chapter is introductory, and here is discussed in general the various conditions underlying the epileptic convulsions and psychoses. In regarding epilepsy as an organic disease of the brain, he points out that he may be going further than some other observers, but he supports his view by "the unsatisfactory results of treatment in the majority of cases, the overwhelming numbers of epileptics who become victims of the confirmed disease, and the progressive character of both the paroxysmal and inter-paroxysmal symptoms." The next two chapters are devoted to etiology, which is taken up in all its aspects, and



numerous tables are supplied. As is usual, the author assigns the chief predisposing cause to hereditary influences, and he finds that 37·2 *per cent.* of his cases are due to ancestral epilepsy, the number being brought to 51 *per cent.* when other hereditary neuropathic influences are included. He thinks that this is really under the number, for when hospital and private cases are analysed separately a heredity occurs in 19 *per cent.* more cases in the latter than in the former. The determining causes, both physiological and pathological, are closely scrutinised, and he summarises his views as follows: "An endeavour has been made in the preceding pages to show that the epileptic tendency is a sign, or stigma, of a neuropathic inherited disposition, the anatomical basis of which is seen in certain well-defined structural peculiarities, both of the body and of the cerebral cortex. In those who have inherited the epilepsy tendency a convulsive habit may be established, either in the course of natural development, or as a result of certain occasional or accidental causes. Once the convulsive habit has been established there is a tendency to its perpetuation in the form of recurring epileptic seizures. Thus, infantile convulsions are frequently the starting-point of subsequent epilepsy, either as a direct sequence of the convulsions, or in later years at or about the onset of puberty." This view brings epilepsy, etiologically, very near to insanity, and shows how much they have in common.

Two chapters are given to the clinical study of epileptic fits, and in connection with these we may quote the following passage, in which the psychical factor is most properly brought into great prominence: "In the earlier days the convulsion or fit was regarded as the sole element of importance in the clinical study of epilepsy, but in more recent years the psychical factor has come to be looked upon as of almost equal importance, and both are regarded as manifestations of a predisposition associated with inheritance." We would wish to draw special attention to a series of excellently designed "day-and-night" charts for recording fits, which show at a glance the number and kind of fit for each day and night over a period of a whole year, each chart being only the size of one page. They would be of great service in asylums. In discussing remissions, he notes a point of interest, which is the occasional existence of a remission extending over the ages of puberty, and early adolescence in those who have previously suffered from fits and who have eventually become confirmed epileptics. There is a chapter on the mental states, which are well known to all alienists, and he defines as psychical equivalents "the mental phenomena of the pre- and post-convulsive states when they occur without convulsion or spasm," and he adds that he has never seen any psychical equivalent that had not its counterpart in the pre- and post-paroxysmal psychoses of epileptics.

The chapter on pathological anatomy is written by Dr. John Turner, of Essex County Asylum, and is now familiar to readers of the *Journal of Mental Science*. His opinion that the immediate cause of the fit is cortical stasis, resulting from obstruction to the blood-supply by intravascular clotting in a brain hereditarily and structurally predisposed to instability and convulsion, is distinctly novel and interesting, and, although convulsions may not arise from a local anæmia in every part of the brain, the occurrence of thrombi in vessels supplying the silent

areas may be the cause of the attacks of stupidity and confusion, or excitement, from which epileptics occasionally suffer. Dr. Aldren Turner gives a clear *resumé* of the chemical pathology, and discusses the auto-intoxication theory, which he is inclined to favour, believing that there are arguments in support of it. He does not go so far as to say that all types of epilepsy may be explained by this theory, yet, when taken in conjunction with the results of the researches of Dr. John Turner, "there would appear to be proof that some types of epileptic paroxysms may be ascribed to auto-intoxication in persons hereditarily and structurally predisposed to convulsion. These are, serial epilepsy, the status epilepticus, and fits associated with acute psychoses, as post-convulsive symptoms." With regard to recovery, his standard is nine years without a fit, and, in his experience, about 10 *per cent.* may be regarded as possible cures.

Under treatment he urges prophylaxis by care in the upbringing of a neuropathic child, that over-exertion and strain, both intellectual and physical, should be avoided, and that the peculiarities of each child should be carefully studied. He deprecates the use of bromide salts in larger doses than 60 grains in the day; if benefit does not follow, some of the various other remedies should then be tried. Treatment in an institution, although not always possible, is often the best, on account of the ease with which patients can be brought under satisfactory supervision. There is a short description of epileptic colonies in the appendix, which is of value, as these are gradually being recognised as the most convenient way of dealing with the unfortunate sufferers from epilepsy in the present state of science. A good index completes the book.

Throughout the book there is continuous evidence of clear insight, an open mind, and broad views on the part of the author, enabling him to treat his own numerous observations and his extensive knowledge of the ideas of others in a careful and judicial manner. The result has been that this volume will certainly take its place as a work of authority, and it has enhanced the reputation of the author. It is a study of epilepsy which is very satisfactory to the asylum physician, as it brings all epileptics into line with the class he sees daily, and with the psychoses generally.

C. H. G. G.

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*Lectures on Neurasthenia.* By THOMAS D. SAVILL, M.D.Lond.  
London: H. J. Glaisher, 57, Wigmore Street, W. Pp. 216.  
Price 7s. 6d.

The third edition of these Lectures deserves perusal by every student of mental diseases, for the author's special experience of the various forms of exhaustion psychoses will be a fitting complement to that of the asylum physician who has the later care of not a few of those so lucidly and instructively described by Dr. Savill. The period in the history of several cases of insanity before that of actual registration is that described by Dr. Savill in these lectures, which are concise, clearly written, and eminently practical. The whole volume reminds us of

Trousseau's beautiful lectures. It is pleasantly written, well arranged, provided with a most useful bibliography, and it has a serviceable index. In it is a clinician's experience logically put forward after thorough investigation, the differential diagnosis of these perplexing cases is clearly described, the pathology is sound, and the treatment practical.

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### Part III.—Epitome of Current Literature.

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#### I. Neurology.

*A New Method of Testing the Hearing of Dogs* [*Eine neue Hörprüfungs methode bei Hunden*]. (*Neur. Cbl.*, Nr. 7, 1907.) *Kalischer, O.*

Dr. Otto Kalischer has followed his valuable researches on the extirpation of the brain in parrots by a noteworthy inquiry into the function of the temporal lobe. In former ablations of portions of the brain, the significance of after-effects was left to observations dependent upon casual circumstances, sometimes under the influence of the whole cerebral cortex. Kalischer has hit upon the idea of subjecting the dogs upon whom he operated to a preliminary drill. He taught them not to seize upon a piece of flesh till a particular note was played on the organ, or on the piano. Ordinary dogs learned this lesson in about a fortnight, and arrived at such perfection that the dogs understood the smallest musical interval half tones higher and lower than the prescribed note. Even amongst pronounced dissonances the note for food was promptly recognised. It is worthy of remark that the dogs in general can hear the whole gamut, a capacity which few men with a musical ear are possessed of.

In his experiments, Dr. Kalischer took precautions to isolate the hearing function by blinding the drilled animals. In others, he removed the cochlea; if one of these organs was removed, there was no change in the dog's behaviour, but when both cochleæ were destroyed, the lessons of the drill were lost.

Kalischer now went on to the ablation of the temporal lobe. It need not surprise us that the notes were still recognised when but one temporal lobe was removed, but, what is singular, when both temporal lobes were extirpated in the second week after the animal, recognising the notes, was able to go through its former drill; Kalischer was even able to teach the animal to learn to observe a new note.

By the former less precise methods of observation, animals deprived of the temporal lobes ceased to show a response by obeying orders, or erecting the ears, or wagging the head; while Kalischer's dogs, as described, were attentive to the notes he had taught them. After a time, a slight reaction to sounds appeared with the dogs under ordinary observation.

Kalischer is of opinion that there are reactions to hearing from nerve tracts below the cerebrum. All those reactions which depend

upon the awakening of the attention of the animals, that is upon a connection of the hearing organs with the functions of the upper brain, cease to occur when the temporal lobes are removed, while with the dogs subjected to the drill, the sound of the note only served for the invitation or summons of the process of eating.

Further experiments upon the destruction of the corpora quadrigemina went to show that the hearing process concerned in the drill may fall below these ganglia.

WILLIAM W. IRELAND.

## 2. Psychology.

*Psychopathology in Schiller's and Ibsen's Plays* [*Psychopathologisches bei Schiller und Ibsen*]. (Centralb. f. Nervenheilk. u. Psychiat., March 15th, 1907.) Hoppe, A.

The psychiatric investigation of the imaginary beings created by dramatists has long been a favourite amusement of alienists. Not long since a Paris thesis was devoted to an examination of the mental state of all Ibsen's leading heroes and heroines. The lawyers are now beginning to join in from their point of view. Wulffen, a Dresden lawyer, has published a criminological study of the Moor family in the *Robbers* and of Nora in the *Doll's House*, and Dr. Hoppe, as an alienist, now criticises Wulffen and sets forth what he conceives to be the sound psychiatric view of these personages. As Hoppe very truly remarks, the poet, in pursuing his own ends, is not bound to be scientifically exact; it is impossible to give an exact diagnosis of the insanity of Faust's Gretchen, yet the prison scene is just as moving to an alienist as to anyone else. The layman, however, is apt to think that medical handbooks will yield the names of mental conditions depicted by the poet, and Wulffen, Hoppe believes, has not quite escaped this tendency. He regards the Moors as a family in the course of hereditary degeneration. Franz Moor, in Wulffen's opinion, is a "born criminal," though without "moral insanity," and represented with profound insight; "from the present standpoint of science he is not criminally responsible." Hoppe considers that even if this diagnosis were correct, from the dramatic artist's point of view there would be loss rather than gain, for the artist desires that his creations should share the common characters of humanity, and if they are mere mental monstrosities, working according to laws of their own, they lose in human interest. While Hoppe is not in agreement with those who hold that Schiller avoided the introduction of psychopathic elements, he thinks such elements are much vaguer than is maintained by Wulffen, who also believes that Karl Moor is a picture of paranoia, a contention Hoppe will by no means agree to. With regard to Nora, however, he agrees with Wulffen in seeing a case of hysteria, or at all events a character who may be fairly regarded as hysterical. It is interesting to note that Wulffen does not regard Nora's proceedings as coming within criminal law. While differing from Wulffen at many points, Hoppe considers that his discussion is marked by great dialectical skill.

HAVELOCK ELLIS.



### 3. *Ætiology of Insanity.*

*On the Etiology of Congenital and Early Acquired Mental Deficiency*  
 [Zur Kenntniss der Ätiologie der angeborenen und frühzeitig erworbenen psychischen Defektzustände]. (*Psychiat. neurol. Wochenschr.*, Nr. 48, 49, und 50, 8 Jahr.) Schlöss, H.

Dr. Schlöss, of Kierling-Gugging, in his inquiries into this subject has carefully examined 300 cases—150 of either sex. Rarely could the mental deficiency be attributed to one cause alone. Even when there was insanity or nervous disease in the parents, there were subsidiary factors, such as injury in intra-uterine life or during child-birth. Drunkenness in the parents seemed principally to be the cause of idiocy indirectly by transmitting a disposition to eclamptic attacks.

Dr. Schlöss has noted this tendency in several children of one family without being able to find any trace of nervous disorders in the ascendants or the collateral relations, although the occurrence of such eclamptic fits is undoubtedly commoner in neurotic families. The attacks often come on in teething, especially from the sixth to the eighth month. When the intelligence is permanently affected, the deficiency is generally observable shortly after the attacks, although sometimes it supervenes later. Eclampsia favours the disposition to epilepsy. Most children who show mental weakness following epilepsy have had eclamptic fits. In these cases there was generally a hereditary neurosis. He has remarked that rachitic children who have suffered from eclamptic attacks rarely fall into epilepsy. Not unfrequently paralysis followed these eclamptic fits. The commonest forms were right-sided hemiplegia, then paralysis of the left or right arm, left-sided hemiplegia, paralysis of the right leg, or paraplegia.

Amongst the infectious diseases of children, Dr. Schlöss signalises whooping-cough as particularly dangerous for causing eclamptic fits and effusions of blood within the cranium.

The most critical time against acquired idiocy falls in the second and third year of life. He mentions some remarkable cases in which imbecility was held to come on after surgical operations. A boy with no neurotic heredity had remained in a normal condition up to his third year. He was much alarmed at the prospect of an operation for the removal of nasal polypi, and after the operation he became nervous, timid, anxious, had night terrors, and ceased to advance in intelligence. A girl, *æt.* 5, whose mother was mentally abnormal and sister weak-minded, was operated on for caries of the bones of the hand. The parents attributed the subsequent feeble-mindedness to the narcosis. In a third case, a boy, *æt.* 7½, who had a neurotic heredity, epileptic troubles followed an operation on the bladder which ended in a demented condition.

WILLIAM W. IRELAND.

#### 4. Clinical Psychiatry.

*Hypochondria* [*De l'hypochondrie*]. (*Arch. de Neurol.*, September, 1905.)  
Roy, P.

Between the hypochondria minor, met with by every general practitioner, and the hypochondria major, which is practically encountered only by alienists, every intermediate grade exists. The study of its pathogenesis should, however, limit itself to the milder forms, and neglect those complex cases in which ideas of negation exist. There is considerable difference of opinion as to whether the morbid preoccupation is to be regarded as originating in imaginary, or in real, sensations. The two opposing schools which thus arise may be termed the psychical and the visceral—and the author thinks that they may be represented by Dubois (of Berne) and Head respectively. Dubois maintains that hypochondria lends itself peculiarly to psychical therapeutics, and considers that it is dangerous to look for peripheral affections, for, in these cases, to look for them is to establish them. Head, as a result of his researches into the zones of cutaneous hyperæsthesia existing in his cardiac and tubercular patients, concluded that the mental symptoms arose from an abnormal state of the viscera, which caused the sensations resulting from the internal organs to rise above the threshold of consciousness. Modern authors tend to assign a more and more important place to the cœnesthesia in both normal and pathological affective states. From an anatomical point of view the cœnesthesia may be regarded as the consciousness of the sympathetic system. Everyone admits that in certain cases, at any rate, hypochondria may be symptomatic, *e.g.*, zoopathy in gastric cancer, and the proportion of such cases increases with the improvement in our diagnostic methods.

The author's opinion is that hypochondria invariably contains both a visceral and a psychical factor. That lesions of the sympathetic occur in mental diseases is evidenced by the occurrence of visceral analgesias in tabes and general paralysis. Similarly, hydrochondriacal paralytics have exhibited lesions of the semilunar ganglia and of the splanchnic nerves. These organic troubles are, however, in themselves not sufficient; a special psychical constitution is also necessary—a veritable hypochondriacal temperament. The rôle of the intellectual element is well seen in the nosophobia of medical students. Although both the organic and psychical factors are necessary, their relative importance varies in individual cases.

The two factors may be encountered in numerous mental diseases, and their co-existence will produce a state of hypochondria. Hypochondria does not exist as a distinct entity; there are only hypochondriacal states symptomatic of some other affection. Thus they may occur in the various dementias—senile, alcoholic, dementia præcox, and above all in general paralysis. They are frequent in chronic alcoholism and other toxic conditions, a fact explained by the cœnesthetic troubles prevalent in these cases. A hypochondriacal paranoia has also been described under various names by different authors. Lastly, a whole group of minor hypochondriacs belong to neurasthenia. This last group is peculiarly susceptible to psychotherapeutics.

BERNARD HART.

*Fugues in the Psychoses and Dementias* [*Les Fugues dans les Psychoses et les Démences*]. (*Arch. de Neurol.*, January, February, 1907.)  
Ducosté, M.

Fugues in epileptics, hysterics, and degenerates, have been frequently described, but fugues occurring in the psychoses have not received sufficient attention. The author defines a "fugue" as a temporary state of nomadism occurring without motive. Distinction must be made between *motive* and *end*. Except in the fugues of demented, the patients are going to a particular place, and know that they are going there. The above definition distinguishes fugues, by their accidental and temporary character, from cases of habitual vagrancy, though in some cases they ultimately pass into the latter.

*Alcoholism*.—(1) Fugues of instability: Contrary to the opinion generally held, the rôle of hallucinations is here very unimportant. The fugues are rather a result of that need of activity and movement which is developed at an early stage in alcoholic intoxication. They are generally short, conscious, and without subsequent amnesia. In the diagnosis it must always be remembered that alcoholism is often a symptom of another disease, and not a primary factor. Thus fugues accompanied by alcoholic excess occur in manic-depressive insanity. (2) Second-state fugues resemble the epileptic or hysterical fugues, and are followed by amnesia. In these cases the degree of intoxication has usually been deeper.

*Manic-depressive insanity*.—The author has only met with fugues in the manic phase. They are conscious and well co-ordinated, often accompanied by psycho-motor agitation, and tendencies to alcoholic and sexual excess. Subsequent memory is preserved intact. The patient's recovery is accompanied by insight into his previous condition, and he recognises that the fugue was performed without motive. In this respect these individuals differ from degenerates, who attempt, with their feeble powers of invention, to legitimate their fugues.

*General paralysis*.—The fugues have the demential stamp, with that absurdity in the details which characterises the paralytic. They are accomplished without end and without motive, or perhaps with some inadequate and ridiculous motive. Consciousness is, if not absent, at least very enfeebled, and subsequent memory of the places traversed is either altogether lost or very confused. Often the patients walk up to the point of exhaustion without eating or sleeping. Occasionally, however, fugues occur during the early stages of general paralysis, the so-called medico-legal period, which lack to a considerable extent the demential imprint.

*Senile dementia*.—The fugues are performed without motive or end. The patients lack synthetic consciousness, frequently lose themselves in the streets, forget their address, and wander all night aimlessly. Afterwards they have no recollection of where they have been.

*Dementia præcox*.—(1) Fugues of instability: these resemble those occurring in alcoholic cases. (2) Impulsive fugues: consciousness and memory obscured. The fugue commences abruptly, is generally violent, accompanied by disorder in acts and words, and of short duration. (3) Fugues of intellectual deficiency: conscious, fairly well carried

out, subsequent memory preserved. (4) Fugues of profound dementia : unconscious, without end, with complete, or almost complete, subsequent amnesia.

BERNARD HART.

*A Contribution to the Study of the Eye in the Insane [Contribution à l'Étude de l'Œil chez les Aliénés]. (Arch. de Neurol., January, 1907.) Mézié, A., et Bailliart, P.*

More than 200 subjects were examined, and a considerable number of visual fields, varying from 3 to 84 per patient, were obtained ; control observations were made amongst the attendants.

In all the patients hallucinatory states, and states of depression or excitement, were accompanied by variations in the extent of the visual field. These variations manifested themselves several hours before the appearance of the mental trouble, and persisted for several hours after its cessation. The degree of the variation was proportional to the intensity of the mental symptoms.

The hallucinatory states are characterised by a retraction of the field, constantly affecting its upper portion, and very frequently its outer portion also. The retraction is always similar in form in the two eyes, though sometimes differing in degree.

In states of depression, the field is constantly retracted in its upper part. This is usually accompanied by variations due to the presence of complicating factors, hallucinations, etc. In states of excitement an expansion of the visual field in all directions occurs. In the congenitally feeble-minded there is always retraction, invariably affecting the upper part of the field, sometimes concentric. In manic-depressive insanity the alterations in the mental condition are preceded by sudden variations in the visual field, enabling one to anticipate the outbreaks of excitement and depression.

As regards general paralysis, no characteristic alterations were observed—the visual field varied as in other forms of insanity, according as hallucinations, excitement, or depression were present.

In addition to their researches upon the visual fields, the authors also examined in each case the pupils, the fundus, and the refraction. They were unable, however, to draw any very definite general conclusions, and this portion of their paper, though of great interest, does not lend itself to an epitome.

BERNARD HART.

*A Case of Negativistic Amnesia [Un cas de Négativisme Mnésique]. (Journ. de Psych. Norm. et Path., March, 1907.) Siglas.*

The present case might also be designated, "fixed idea of forgetfulness." The patient, V—, strenuously maintains that he has lost his memory, and that he is incapable of giving any information concerning either his former history or his present surroundings. It is obvious, however, that he makes no real effort to recall the past, and it is possible, by means of various indirect methods, to demonstrate that V— not only registers new acquisitions, but evokes them at the proper moment. He is in no way disorientated ; he knows the attendants, and when necessary calls them by name. He is employed in the refectory, and when patients are ill he no longer lays for them. If appeal is made directly to his



memory V— knows nothing, but by various subterfuges a complete personal and family history has ultimately been obtained from him. Dates, however, he professes himself incapable of retaining, and they cannot be elicited either by the direct or indirect method. The date question has become a kind of obsession. V— is always examining the calendar, asking the patients the date, and noting the answers on various pieces of paper. Immediately afterwards he is incapable of repeating the information, but he remembers the exact number of times he has written it down, and never confuses the particular piece of paper with the notes of a preceding day. This date ignorance is a primary fact upon which V— bases the plea that he has lost his memory. If a souvenir has been elicited by the indirect method he comments “I don’t call that remembering—I cannot even remember the date.”

The above phenomena present a superficial resemblance to those occurring in certain obsessional cases, but the symptoms usually accompanying the obsession, anguish, etc., are entirely lacking. We have really to deal with a more profound lesion, negativism, systematised in the domain of memory. V—’s case differs essentially from those described as “continuous amnesia.” In the former the patient’s souvenirs are woven into his intelligent action, in the latter they are only recalled in second states, dreams, etc., and even then only in a fragmentary manner. Again, the “continuous amnesic” strenuously endeavours to recall the lost memories, whereas V— makes no such effort. The one cannot, the other will not; the one is aboulie, the other negativistic.

BERNARD HART.

*Contribution to the Study of Family Deformities of Congenital Origin affecting the Extremities* [*Contributo allo studio delle deformità congenite familiari della estremità*]. (*Ann. dell’Istituto Psichiat. dell’R. Univ. di Roma*, vol. iv, 1905.) *Fabrizi v. Forlì*.

This paper describes in detail, with anthropometrical data, photographs and radiographs, a remarkable series of malformations of the extremities occurring in four members of the same family. The only points to be noted regarding the parents were that the father was alcoholic and suffered from Dupuytren’s contraction, and that the mother was mentally below the average. There were eight children, of whom the first four (two boys and two girls) died in infancy; they all, according to the mother’s statement, had contracted fingers or toes. The remaining four, all girls, still living and aged from twenty-three to thirteen years, present well-marked deformities in the hands or feet, or in both. In the eldest the fingers of both hands are contracted, the degree of flexion increasing from the index, where it is just perceptible, to the little finger, which is bent almost into the palm; the thumb is flexed at the metacarpo-phalangeal joint; the feet are flat. In the next child the same condition of flexion exists in both thumbs; all the fingers of the right hand and the index finger of the left hand are bent at the first interphalangeal joint; the left foot is flat and the right clubbed. The third girl has the thumbs similarly contracted, and the little and ring-fingers of both hands flexed at the first inter-phalangeal joint; she is also flat-footed. In the youngest child all the fingers of the right hand are flexed to a right angle at the first interphalangeal articulation,

and the left medius is bent at the same joint to a slighter extent; both feet are clubbed. The girls are all below the average in intelligence, and in addition to the deformities described bear numerous stigmata of degeneracy. Discussing the origin of this condition, the author concludes in favour of the view that it depends on a germinal variation. He suggests that the Dupuytren's contraction from which the father suffers may indicate a tendency to such a deviation, and that this tendency has been stimulated by the teratogenic influence of alcoholism.

W. C. SULLIVAN.

*Psychic Hyperæsthesia and Homicide* [*l'Hypéresthésie Psychique et l'Homicide*]. (Arch. di Psichiat., vol. xxviii, fasc. i, ii, 1907.) Marro.

Marro finds that the cerebral condition which determines homicide is essentially a psychic hyperæsthesia, physiological or morbid, which renders the individual unduly sensitive to impressions affecting his personality, while it lowers the level of tolerance for disagreeable stimuli to such a degree that they cannot fail to excite a violent and immediate reaction against the persons who are their source. Developing this explanation—which, as it stands, recalls somewhat the *virtus dormitiva* assigned as the reason of the soporific action of opium—the author goes on to refer to the influences which promote this hyperæsthesia, giving a prominent place amongst them to the period of puberty. In this connection he points out that during the years 1890-95, in Italy 41 per cent. of homicides were committed by persons under twenty-five years of age. Another factor to which he attributes much importance is that of climate. From the statistics of crime in Italy he shows, in agreement with what has been found in other countries, that homicides and crimes of lust are much more frequent in the southern districts, while crimes of acquisitiveness, which are more under the influence of economic conditions, show no such correspondence with climate. As a means of combating this cerebral hyperæsthesia, Marro would lay much stress on hydropathic exercises as a part of school training.

W. C. SULLIVAN.

### 5. Pathology of Insanity.

*Contributions to the Pathological Anatomy of the Brains of Cretins.* (Zeitschr. f. Heilk., 1906, S. 57-97; reported in Neur. Clb., Nov. 5th, 1907). Scholz and Zingerle.

Scholz and Zingerle, as the outcome of the examination of numerous cases of cretinism, and of a comprehensive study of the literature of the subject, consider that the injuries to the nervous system are produced under the influence of disturbance of the function of the thyroid gland. Some parts of the nervous system are more affected, while others are less so. They recognise deficiencies in development, and, more rarely, traces of inflammation. The dura mater is found thickened through inflammatory processes. The cortical grey matter is more prominent than the white matter. The brain substance is generally firmer than usual. Hydrocephalus is often present. No uniform

alterations can be found; hence the clinical symptoms vary, although they generally unite to form the characteristic type of cretinism.

There are asymmetries of the hemispheres, sclerosis of the gyri, small size of the cerebellum compared to that of the cerebrum. To the naked eye the most characteristic alterations are anomalies of the convolutions; under the microscope there are observed the lesions of sclerosis in imperfect growth of the nervous tissues.

The pathological anatomy of the cretin's brain has much resemblance to that of some forms of idiocy, both to the naked eye and under the microscope.

WILLIAM W. IRELAND.

*Cerebral Asymmetry in the Normal and the Criminal* [*Asimmetrie Cerebrali nei Normali e nei Delinquenti*]. (*Archiv di Psychiat.*, vol. xxviii, fasc. i, ii, 1907). Lattes.

In this interesting contribution to the question of cerebral morphology in the criminal, the author records the results of his study of fifty brains, considering more particularly the differences in convolutional pattern between the hemispheres of the same brain. From his own observations, and from those published by others, he finds that, in the points where there are the most characteristic variations in the surface morphology, asymmetry is relatively much more common in criminals than in normal individuals. In the occipital lobe—with regard to which he follows the description of Elliot Smith (*Records of the Egyptian School of Medicine*, 1904)—a well-marked sulcus lunatus, giving a pithecoïd type to this region, is found to occur in a single hemisphere only, much more often in the criminal than in the normal brain. Still more pronounced is the difference in respect of the subdivision of the frontal lobe into four horizontal convolutions. This condition in normal brains is found to show a slight degree of asymmetry with predominance in the right hemisphere, while in the criminal the asymmetry is very much more frequent, and the four convolution type occurs more often in the left hemisphere. It could not be made out that this greater degree of asymmetry in the criminal brain was related to a definitely regressive or a definitely progressive tendency. It appeared, on the contrary, sometimes to be due to the greater frequency of characters, such as the Affenspalt or well-marked sulcus lunatus, to which a pithecoïd significance is generally attributed, and sometimes to the development of variations towards a more complex and higher type, as, for instance, in the case of the interrupted interparietal sulcus. The author points out that this combination of conditions above and below the average level of evolution is met with in other regions of the body in the degenerate, and he suggests that it is paralleled by the combination of genius with criminality. The paper is illustrated with very good photographs.

W. C. SULLIVAN.

## 6. Treatment of Insanity.

*The Injection of Alcohol into Peripheral Nerve Trunks* (A Paper read at the Société de Neurologie, July 5th, 1906). (*Gaz. des Hôp.*, July 10th, 1906.) Brissaud, Sicard and Tanon.

The results reported are of considerable importance in connection

with the treatment of affections of the nervous system. In the first place, the investigators confirm the statement that favourable results follow the injection of alcohol into the branches of the trigeminal nerve, according to the procedure of Lévi and Baudouin. In six cases of trigeminal neuralgia, and in three cases of facial spasm (one of which was of fifteen years' standing), a few injections resulted in a partial cure. In two cases of facial spasm treated in this way by MM. Valude and Dupuy-Dutemps, the patients remained free from spasm, in one case for six months, and in the other for a year. But of still greater interest is the fact that the writers have used this method with quite remarkable results in cases of contracture of the extremities occurring as sequels of hemiplegia and paraplegia from organic disease (hemiplegia following embolism in a case of mitral disease, for instance, and paraplegia from hæmato-myelia in a diver), also in a case of spasm of the foot of fifteen years' duration; and finally in two cases of paralysis agitans.

Alcohol at 80 degrees was used for injection; the nerve trunk was exposed by incision, and from one to three cubic centimetres injected into the interior of the nerve-trunk. Immediately after the injection, the contracture, the exaggeration in the reflexes, the clonus, and Babinski's sign disappeared; soon there ensued paresia and partial anæsthesia, lasting from three to five days or even longer. A week after the operation there was R. D., which disappeared in the course of the following fortnight; but the increase in the reflexes and the clonus did not reappear. A serious drawback to the success of the treatment, however, is the onset, towards the end of the first week, of numbness and formication, even of distinct pains, in the area of distribution of the nerve, and these symptoms may continue for two or three weeks. This may be a question of dosage; probably the alcohol employed is too concentrated; the investigation is being pursued in order to ascertain what strength it is best to employ in order to secure the benefits of the treatment while avoiding the consecutive neuritis. Care must be exercised in the selection of cases for this treatment. In cases of hemiplegia of very long standing and in cases of "pseudo-bulbar paralysis" no benefit was obtained from the injection. Again, in one patient in whom an injection was made into the external popliteal nerve, there ensued intense pains and trophic troubles. To obtain the desired effects the alcohol must be injected into the nerve-trunk itself and not merely into its neighbourhood. That the alcohol is actually passing into the nerve during the injection is manifested by the pain referred to its area of distribution.

M. EDEN PAUL.

*Cases of Acute Mania with Depression (Manisch-depressives Irresein) treated by Prolonged Administration of Trional. (Cbl. f. nervenheilk. u. Psychiat., February, 1907.) Wolff.*

In the same journal (May and September, 1901) Dr. Wolff published a paper on the "Trional Cure," to which the present contribution is supplementary, containing a report of seven additional cases. The cases would, for the most part, in England be classified simply as acute mania. The mental disorder was sudden in onset, there was



great excitement, with loss of the normal sense of relation to the environment, and hallucinations. (As the cases were in an asylum at Beirut, and were all Mohammedans, the question of alcoholic causation hardly arises.) The administration of trional was begun immediately on admission, the drug was given in divided doses, ranging from 15 gr. to 45 gr. daily, usually by œsophageal tube; administration was generally continued for a fortnight. The motor excitement gradually subsided, the patient became calm, and during the second week there was an almost continuous state of sleep or stupor. It seems evident that the action of the drug was cumulative. After its use had been discontinued the patients took several days to wake up properly, and then for a few days were either depressed or irritable. Soon, however, their mental state became perfectly normal. The author does not claim that the action of trional in cases of the type described is in any way specific; indeed, everyone knows that such cases commonly get well without the administration of any drugs at all. But he considers that their duration is markedly shortened by the "trional cure," the therapeutic value of which depends on the prolonged narcosis. An equally satisfactory result could, he says, probably be secured by the use of veronal, or some other allied hypnotic. He did not see any serious symptoms of trional intoxication in any of his cases. He regards the treatment as perfectly safe in an asylum, but unsuitable for private practice.

M. EDEN PAUL.

*Heroin and Heroinomaniacs. (Le Prog. Med., February 23rd, 1907.)  
Duhem, P.*

During recent years, Drs. Duhem and Sollier have had under observation a number of cases of heroinomania (as they term it), or heroinism (as it is, perhaps, more suitably named). The object of their paper is to describe the peculiar symptoms that occur during the withdrawal of the drug, and to draw attention to the dangers attending its use. Pouchet pointed out the close resemblance between the chemical composition of heroin and that of morphine—heroin is, in fact, diacetylmorphine—and expressed doubts whether a body so similar could be safely used as a morphine substitute in cases of morphinism (for which purpose it was at one time widely advocated). [Some years ago, in his work on *The Cure of the Morphia Habit*, Dr. Oscar Jennings stated that, while it was quite easy to substitute the heroin habit for the morphine habit, the change was one greatly for the worse.]

As regards the independent therapeutic use of the drug, it has been used chiefly in diseases of the respiratory organs, being especially valued for its anti-dyspnoic powers and its calmative action on the respiratory system in general. It has also been largely used in chronic, painful disorders, and many consider its analgesic effects by no means inferior to those of morphine. Duhem admits the activity of heroin in relieving the symptoms of respiratory disorders; but he considers that the effects are transient, that the dose has rapidly to be increased, that habituation soon follows, and that the heroin habit is worse than the morphine habit, and less easy to cure. During the last year or so cases of heroinism have become extremely frequent—as frequent as a few years ago were cases of combined morphine and cocaine habituation, in which

morphinists had acquired the additional cocaine habit in the effort to substitute the use of cocaine for that of morphine.

The cases of heroinism treated by Duhem and Sollier were sixteen in number. Of these patients, three acquired the habit through the administration of the drug for the relief of spasmodic asthma; four were morphinists in whom the use of heroin had been substituted in the hope of curing the morphine habit; in three cases the use of the drug as an analgesic had led to habituation; in the remaining six cases the cause was one of the well-recognised causes of morphinism and other drug habits, the narcotic having been taken to relieve fatigue (intellectual or physical), overwork, insomnia, grief—the whole gamut of nervous symptoms, of which morphinism is so frequently the climax. The daily dose of the drug taken by these patients was a very variable one, ranging from 1 to 20 gr.

The method of withdrawal of the heroin was similar to that employed by Sollier in cases of morphinism. The patient was secluded; the *primæ viæ* were cleared; the dose was then rapidly diminished during about a week, after which it was completely withdrawn, the eliminative organs being suitably stimulated throughout this period. Subsequently, as indicated, care was taken to bring about “the eliminatory crises necessary for the proper reintegration of the glandular epithelia”; finally, the patient was fortified after the withdrawal, more especially by a process of hyperalimentation. But whereas on these lines demorphinisation is commonly effected with sufficient ease, and without interruption or disturbance, deheroinisation is accompanied by alarming and disagreeable symptoms, for which the physician must be ever on the alert.

In the earlier cases treated, just as in the withdrawal of morphine, that drug was given in gradually diminishing doses, so heroin in diminishing doses was used during the process of deheroinisation. During demorphinisation, when, as sometimes happens, the cardiac weakness common during this process takes the extreme form of actual syncope, a minimal dose of morphine hypodermically suffices to restore cardiac activity; but serious symptoms occurring during deheroinisation are not similarly relieved by the administration of heroin, while a small dose of morphine is promptly beneficial. Therefore Drs. Duhem and Sollier soon treated their cases of heroinism by substituting morphine for heroin, and then proceeding with demorphinisation in the usual manner. But even in this way all the dangers of deheroinisation are not avoided. The elective action of heroin is on the bulbar respiratory centre, and it is, above all, respiratory activity which fails during the withdrawal of the drug. “During the first days of the withdrawal, the phenomena observed are similar in most respects to those that are seen in morphinists during the withdrawal of morphine, but the prostration is far more severe, perspiration is more abundant, the leaden tint of countenance indicates a more severe intoxication. . . . With further reduction of dose a condition of mental torpor ensues, the circulation and respiration become sluggish, hæmatosis is inactive, paroxysms of dyspnoea ensue, and in the absence of extreme watchfulness severe respiratory syncope is a very probable occurrence. Moreover, the onset of this respiratory failure is most insidious, . . . the pulse gives no warning whatever, but quite suddenly the respiration

ceases. In such cases the patient can only be restored by a combined injection of morphine and ether. Heroin, we repeat, is absolutely useless."

Apart from the greater difficulties and dangers of the period of actual withdrawal of the drug, the cure of heroinism compares unfavourably with that of morphinism in the far more protracted period of convalescence. After the withdrawal of heroin, the natural functions are much less rapidly re-established; appetite returns very slowly (rendering the necessary hyperalimentation far more difficult than after demorphinisation); insomnia also is far more protracted and stubborn; the loss of weight during suppression is apt to be greater, and the normal weight is far less quickly regained. Duhem and Sollier conclude that while morphine is a dangerous drug which should be used only with great caution, heroin is a drug which should never be used at all. Its sedative effects are not superior to those of morphine, its cumulative effects are more dangerous than those of morphine, and the drug-habit to which it frequently gives rise is more serious than the morphine habit. Of two ills, choose the lesser. "But in prescribing morphine, even the medical man should never lose sight of the fact that in the majority of instances morphinism originates in the excessive, sometimes culpable, complaisance of the patient's medical adviser."

M. EDEN PAUL.

- (1) *Surgery for the Relief of Insane Conditions.* Max E. Witte. (2) *Preliminary Report of Gynecological Surgery in the Manhattan State Hospital, West.* Leroy Broun. (3) *Observations on Some Recent Surgical Cases in the Manhattan State Hospital, East.* J. R. Knapp. (*Amer. Journ. of Insanity*, January, 1906.)

The most important and interesting of these papers is Dr. Witte's, dealing as it does with the general theory of surgical intervention in cases of mental disorder. In the first place he considers that benefit is often erroneously claimed as the result of a surgical procedure, when it is more likely that time has been the principal factor in relief; and, again, he insists that in some cases the nature of the operation may be indifferent, the improvement observed to follow it depending upon the "crisis" in the organism, with its attendant changes in innervation, circulation, nutrition, and metabolism. He compares the benefit of simple laparotomy in cases of tubercular peritonitis, and he details two cases of insanity in which cure followed organic crises of a non-operative character. One of these was chronic mania of twelve years' standing in which recovery occurred immediately after an attack of acute lobar pneumonia; the other patient, a man who had been considered hopelessly insane for years, broke his humerus in an endeavour to escape from the asylum in which he was confined. He recovered promptly, not only from the fracture of the humerus, but also mentally.

Dr. Witte lays it down as an axiomatic principle that in the treatment of the insane, surgical intervention should be employed under precisely the same conditions as in the sane. There are, however, two fields of surgical enterprise to which considerable importance has been attached in regard to the relief of mental disorder: these are cerebral surgery and gynecological operations. As regards both, moreover, the evidence

is conflicting, and the time for a final judgment has hardly yet arrived. Whilst on the axiom already laid down there would arise no question as to the need for surgical intervention in cases of recent injury to the skull, with depressed fracture, or signs of meningeal hæmorrhage, Witte's experience leads him to anticipate little benefit from operative interference for the relief of mental disturbance in cases of head injury when a considerable period has elapsed since the receipt of the injury. He gives several interesting cases in support of this view, and deduces the maxim, "Operate early, before the insane condition has become fully developed and fixed." He considered that as time elapses, after serious injury to the brain, the morbid nutritive conditions become fixed, and relief can no longer be hoped from operation. When, in long-standing cases of mental alienation after head injury, the friends are eager for operation, it is right to give the patient the benefit of the doubt; but it is not right to raise illusive hopes of success, and the surgeon should insist that permanent benefit from operation is no more than an unlikely possibility. Doubtless, remarkable benefit does occasionally follow operation in such cases, but Witte opines that in this surgical field, as in others, it is chiefly the striking successes that see the light in the medical press, whilst the failures, probably far more numerous, are commonly left unrecorded.

As regards gynæcological operations in patients suffering from mental disorder, Witte states that the following maxims are the result of his experience and the guide of his practice at the present time:

(1) Unless there is actual disease of the pelvic organs requiring operative aid, relief to mental disorder is not to be anticipated from operative interference with these organs.

(2) Where there is disease of the pelvic organs as a complication of mental disorder, less heroic measures than surgical interference often do much good in the way of improving general health and comfort, and thereby of aiding and promoting mental restoration.

(3) Pelvic disease in which surgical interference would be indicated if the patient were sane, should be similarly treated if the patient is insane.

(4) The annulling of procreative power by surgical intervention is indicated and justified in certain types of insanity, deficiency, and degeneracy depending on inherited and transmissible constitutional tendency or abnormality.

In regard to the first of these maxims, Witte states that a few years ago, when oöphorectomy had attained the evil status of a surgical fashion, he himself was infected with the prevailing enthusiasm, and expected much from the artificial induction of the menopause in patients in whom mental disorder was aggravated during the menstrual period, but in whom no positive intra-pelvic disease could be shown to exist. Experience has, however, doomed these hopes to bitter disappointment, though in some cases, indeed, the operation was justified by his fourth maxim, or by the relief given to sexual visceral irritation. Witte thinks there has been a tendency of late to exaggerate the influence of the genetic function in the life of women. He concludes his paper by stating that he does not restrict to the female sex the desirability of the sterilisation of the unfit.



Leroy Broun publishes a table of several hundred operations, major and minor, and the result of these (both as regards the physical and the mental condition of the patient). The operations were for the most part gynæcological, and were all performed on the female inmates of the asylum. The length of time during which he has been conducting them is, he thinks, too short for the conclusions drawn to be as yet of very great value; there are, however, some facts which he regards as well established:

(1) If the operation, when needed, has been properly done and the patient is not mutilated by an uncalled-for castration the mental condition is never aggravated by such a procedure. This, as stated, has been the experience of Manton, who has been operating for over twenty years; also that of Picqué, whose operations have extended over a period of twelve years, and of himself in the entire range of his surgical work among the insane.

(2) There exists among the patients confined in the various insane asylums many pathological conditions which can, and do, give rise to symptoms detrimental to the patient's physical well-being and mental recovery. Those, with such conditions, have a right to be given relief, irrespective of their mental state.

(3) Under the stimulus of the improved somatic state resulting from surgical relief some of the patients show greater mental advancement under the moral and therapeutic care than were shown before such relief was given. At times this improved mental state continues to one of recovery.

The primary object of surgical operations upon the insane should be to improve the physical status of the patient with one end only in view—of relieving them of physical suffering and nervous disturbances.

If, as a result of this relief, they are mentally improved, it is a sequel not primarily sought, yet welcomed.

Dr. Knapp's paper gives details of several interesting cases of operation on insane patients, but does not deal at any length with the theoretical aspects of the problem. The results of operations on the insane, in carefully selected cases, fully demonstrate, in his opinion, that surgery is one of the valuable means at our command for the alleviation of physical suffering, and, in many instances, if judiciously employed, will also be attended by an amelioration of the mental state.

M. EDEN PAUL.

*Hydrotherapy in Mental Diseases* [*Baignation et Hydrothérapie dans les Maladies Mentales*]. (*Arch. de Neurol.*, September, 1905.) Pailhas, B.

The application of hydrotherapy to mental diseases reaches back at least to the time of Hippocrates. It was first systematically employed, however, by Pomme, a French physician of the eighteenth century, who prescribed for the "vapoureux," baths of various kinds, including, notably, the prolonged warm bath. Pinel, though he praises the simple bath, makes no mention of Pomme's prolonged method. The practice was revived by Turck and Brierre de Boismont, and its modern development may be ascribed to Bonnefous, Guislain, Baillarger, Morel, and more particularly to Kraepelin.

All hydrotherapeutic procedures are based upon an excitation of the periphery of the body, but their effects differ according to the temperature of the water, the duration and mode of application, and the characteristics of the patient. The last condition depends far more on individual peculiarities than on the particular nosological class in which the patient may be ranged. The state of the various bodily organs must be taken into account, and it must not be forgotten that the functional depression of the nervous centres is not proportional to their organic depression, and that the latter is frequently disguised by excitement and agitation. Therefore in asthenic states, prolonged baths, on account of their depressive action, should be in general avoided; recourse may here be had to warm baths of short duration associated with friction, or to wet packing. Foot-baths, with or without mustard, may be used in cases where there is prolonged circulatory trouble with cyanosis of the extremities. The effect, however, must be carefully watched, and supplemented with friction, passive movements, etc. In the lighter degrees of depression, where the general state is relatively good, hot baths may be employed at the outset, with cold baths or douches later.

States of excitement are, as a rule, benefited by prolonged baths at a temperature of  $28^{\circ}$  to  $34^{\circ}$  C., low-pressure douches, or rain baths. Certain cases of excitement, sthenic in character, such as occur in hysteria, are best treated by cold plunge baths. Cold baths have also been recommended in acute alcoholic delirium, but the procedure is not exempt from danger, and should only be employed in the presence of the physician. Acute delirium with high temperature may be treated by cold wet packs, frequently renewed.

In certain patients of rheumatic, gouty, or plethoric constitution, sudorific measures may be usefully employed, such as Russian or Turkish baths.

Insanities of organic origin, such as general paralysis, and those which coexist with cardiac or pulmonary disease, contra-indicate treatment capable of causing congestion of the affected organs, or of depressing their functions. Hydrotherapy must here be partial and symptomatic, and it is only exceptionally, *e.g.*, where bed-sores are present, that prolonged baths are of value.

In subacute prolonged states of excitement, stimulating applications, as, for example, the cold or Scotch douche, may be beneficially substituted for the usual sedative procedures. This applies especially to those cases where an amelioration in the physical condition is not accompanied by a return to sound mentality.

Chronic cases will be submitted to an ordinary hygienic hydrotherapy, while attacks of excitement or depression occurring in the course of such cases will be treated on the general principles mentioned above.

Morel advocated hydrotherapy in general, and prolonged baths in particular, as a prophylactic measure in the prodromal stages of insanity.

BERNARD HART.

*On the Thyroid Treatment of Endemic Cretinism* [Zweiter Bericht über die Behandlung des Endemischen Kretinismus mit Schilddrüsensubstanz]. (Wien. klin. Wochenschr., No 2, 1907, and Neur. Cbl., No. 5, 1907.) Wagner.

Dr. Wagner has been able to give a gratifying report of the success of his treatment of cretins with the thyroid substance, which he has now been prosecuting in Styria for above five years.

In most cases of cretinism the growth is much stunted. This is not apparent before the fourth or fifth year of childhood; indeed, in the earlier years the increase in length is sometimes greater than normal.

As it is important that the treatment should be begun as soon as possible an early diagnosis is desirable. Wagner lays much stress upon an abnormal size of the tongue, and the appearance of a goitre at birth. The peculiar form of the nose is less characteristic; the pale complexion and loosening of the skin often do not present themselves before the second year. In later years, the malady is indicated by the child not learning at the usual time to walk or to speak, by the dirty-white complexion and tumidness of the skin, the dulness and apathy, the late closing of the fontanelles, and the delay of the teething, the peculiar form of the nose, and the slowness of growth. From the observations of Alexander it appears that the deficiency of hearing is often connected with a specific adenoid vegetation, with catarrh of the aural passages. This affection is favourably influenced by the thyroid treatment; where the labyrinth is involved improvement is less easily obtained. Dr. Wagner presents the following conclusions.

Cretinism may be favourably influenced in all its stages, even as late as the twenty-seventh year, by the use of the thyroid substance. The earlier the treatment the better the result.

In the less severe cases (mostly of acquired cretinism) without much deficiency of hearing, a complete cure may be attained if the treatment is begun from the first to the third year. In one case in which it was in use from the sixth week the result was most gratifying. It is, therefore, very important that the parents, in the districts where cretinism is endemic, should be instructed about the means of rescuing their children by having recourse to early treatment.

The stimulus given to the general bodily growth by the thyroid substance is very striking. One patient, who was as old as nineteen years when treatment was begun, increased in height by 15, by 7, and by 6 cm., in all by 28 cm. during the next three years.

In the original paper in the *Vienna Wochenschrift*, Dr. Wagner describes in detail a number of most interesting cases.

WILLIAM W. IRELAND.

*A Year of Treatment of Cretinism with Thyroid Substance* [Ein Jahr-Kretinenbehandlung mit Schilddrüsensubstanz]. (Wien. med. Wochenschr., Nos. 1-3, 1907.) Klimpely, E.

In the same number of the *Neurologisches Centralblatt* there is a report of Dr. Klimpely's experience of the treatment of endemic cretinism in Moravia. This comprised twenty-seven male and nineteen female cretins. The thyroid was administered in tablets, the doses

cautiously increased. In a few cases unpleasant symptoms—diarrhœa, vomiting, and tremulousness—were observed.

Increase in growth generally began in the first three months of the treatment. In one cretin, who was already twenty-two years of age, there was an increase of height of 5·5 cm. during the twelve months.

In cretins from fourteen to eighteen years old, the milk teeth still lasted, and in one of these cases the second dentition commenced. In two young women, one æt. 18, another æt. 24, the menses came, the breasts enlarged, and other signs of puberty appeared.

With his patients, Dr. Klimpely observed an increased appetite, rendered more striking by the thinness following the change in the condition of the skin, which ceased to be dry and tumid, the cessation of the habitual constipation, the disappearance of the goitre, and, above all, the alteration in the apathetic and torpid temperament. The degree of improvement in the intelligence of the cretin is not specified in these reports.

WILLIAM W. IRELAND.

*On the Treatment of Exophthalmic Goitre by Möbius's Anti-thyroid Serum. (Neur. Cbl., Nr. 5, 1907.)*

In this number, there is a collection of reports upon the treatment of exophthalmic goitre with anti-thyroid serum.

Vilhelm Magnus, a Norwegian physician, has tried it in four cases. He has come to the conclusion that this medicament should be used in all cases of the disease. In fresh cases, it may bring an improvement nearly approaching to cure; in more severe cases it gives relief from the most distressing symptoms.

Dr. Magnus observes that a complete cure cannot be expected unless a portion of the thyroid gland be removed. As this operation is difficult and hazardous, he recommends the serum treatment.

Dr. Aronheim, who had previously reported upon two cases of Basedow's disease, in which he had employed Möbius's anti-thyroid serum with decided improvement, describes another favourable instance of the treatment. The patient was a woman, æt. 30. The cessation of the menses was followed by weariness, palpitation, a feeling of distress, and cough with expectoration, and night sweats; pulse small and irregular, 90, circumference of neck 36½, no exophthalmos. There were no tubercle bacilli in the sputum. After taking several doses of the serum there was a decided improvement. The heart, which had extended on both sides, diminished to the normal size; the heart's action became again regular, pulsations fell to 80, and the catarrhal symptoms in the lungs disappeared. The struma remained unaltered.

Dr. Vermes, of Buda Pesth, had a patient, æt. 53, who, after the removal of a uterine tumour, showed the typical symptoms of exophthalmic goitre. Other treatment failing, he tried the anti-thyroid serum in doses of from 30 to 90 drops a day. After using ten bottles there followed improvement in some symptoms, and the disappearance of others. The circumference of the neck diminished slightly; the pulse fell from 140 to 80 beats, while the tremulousness and feeling of heat troubled her no more.

Dr. Mayer, treating a young woman with the customary remedies for



exophthalmic goitre, had recourse to the anti-thyroid serum, from which he speedily obtained a favourable and enduring result. He used doses of 5 drops, slowly rising to 30 drops thrice a day. On the third day the patient felt better; the pulse fell from 150 or 140 to 120 or 100; the exophthalmos abated and the struma diminished. After six months the improvement was found to be maintained.

The favourable reports of Dr. Somerville in the *Glasgow Medical Journal*, vol. lxx, and of Dr. Gevers Leuven, of Munich, are also quoted.

Dr. Heinze, writing in *Deutsch. med. Wochenschrift*. (No. 19, 1906), had made trial of the anti-thyroid serum, but with such poor results that he abandoned the use of it.

WILLIAM W. IRELAND.

*Case of Basedow's Disease Treated with the Milk of a Goat deprived of the Thyroid.* (Norsk. Mag. for Lægevid, p. 707, 1905.) E. J. Thræp-Meyer.

A married woman, æt. 41, who had been suckled by a nurse with very prominent eyes, had become nervous after the birth of her first child in 1883. She had palpitation and heavy perspiration. After the birth of a second child, in 1887, the thyroid began to enlarge, and her general health declined, so that she became very feeble. Various medicines were tried without any benefit. She was then treated with blood from a goat deprived of the thyroid; but the only improvement was an abatement in the frequency of the pulse. When milk from a goat thus treated was used the benefit speedily followed. The bodily weight increased, and the pulse became slower. On January 15th the heart appeared to be normal, the eyes to be less protuberant, and the swelling of the thyroid subsided. If the patient discontinued the milk for a few days the old symptoms again began to appear.

WILLIAM W. IRELAND.

*A Visit to the Asylums and other Institutions of the United States* [*Eine Studienreise zum Besuche der Irren- und verwandten Anstalten in den Vereinigten Staaten Nordamerikas*]. (Psychiat. Neurol. Wochenschr., Nos. 45-52, 8th Jahr.) Hochauf.

This is contained in a series of papers descriptive of the asylums for the insane, the idiotic, and the epileptic, and similar institutions, of the United States, the product of personal visits by Dr. A. Hochauf, of Gugging. The author gives painstaking descriptions of the several institutions. He praises the treatment of the insane which he witnessed in America, and was impressed by the after-care associations which serve for a halfway stage between the lunatic asylums and the outer world. This Dr. Hochauf would like to see in operation in his own country. The author's descriptions are illustrated by nineteen engravings of asylums and hospitals, and plans of the buildings.

He visited the great Agnew asylum, in California, before it was thrown down by the recent earthquake, and adds a short account of the catastrophe. Out of 770 patients there were killed 110 individuals, including 2 physicians and 12 attendants; 70 were severely injured, having bones broken and limbs crushed; 100 were less seriously hurt.

WILLIAM W. IRELAND.

## Part IV.—Notes and News.

### MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

A QUARTERLY MEETING of the Medico-Psychological Association was held at 11, Chandos Street, Cavendish Square, London, W., on Thursday, May 16th, 1907, at 3 p.m., under the presidency of Dr. Robert Jones.

Members present:—Chas. Aldridge, A. J. Alliot, H. T. S. Aveline, G. F. Barham, Fletcher Beach, G. F. Blandford, H. F. Bodvel-Roberts, C. Hubert Bond, David Bower, James Chambers, R. H. Cole, H. Corner, Maurice Craig, W. R. Dawson, H. Devine, T. O'C. Donelan, A. C. Dove, T. Drapes, F. W. Edridge-Green, J. A. Ewan, W. F. Farquharson, David Ferrier, N. J. H. Gavin, B. Hart, H. E. Haynes, J. W. Higginson, G. T. Hine, T. B. Hyslop, A. M. Jackson, Robert Jones, P. L. Langdon-Down, R. L. Langdon-Down, P. W. MacDonald, G. D. McRae, W. F. Menzies, C. A. Mercier, C. S. Morrison, W. F. Nelis, H. Hayes Newington, D. Orr, Bedford Pierce, W. Rawes, H. Rayner, W. Ford Robertson, R. G. Rows, E. T. Sall, G. H. Savage, G. E. Shuttleworth, P. C. Smith, R. Percy Smith, J. G. Soutar, R. H. Steen, R. C. Stewart, D. G. Thomson, J. Turner, A. R. Urquhart, F. Watson, R. Whittington, T. Outterson Wood.

Visitors: Drs. Arkwright, E. H. Bashford, C. E. Beevor, J. P. Candler, G. W. Dean, J. Eyre, H. E. Hedingham, G. M. Hine, G. W. F. Holmes, Howard Horder (Ohio), G. H. Johnston, W. E. Marshall, C. J. Martin, Purves Stewart, W. Williams (B.C.).

Apologies were received from Drs. Bolton, Clouston, Douglas, J. H. MacDonald, Mott, Turnbull, and others.

The following members had been present at the Council Meeting which was held prior to the Quarterly Meeting: Drs. Aveline, Beach, Bond, Bower, Chambers, Craig, Dawson, Drapes, Ewan, Hayes Newington, Robert Jones, P. W. MacDonald, Miller, Pierce, Rayner, Percy Smith, Steen, Thomson, Turner, Urquhart, and Outterson Wood.

The minutes of the previous quarterly meeting having appeared in the Journal were taken as read.

The following candidates were elected ordinary members of the Association: Sidney Herbert Clarke, M.A., M.B., B.C.Cantab., M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, County Asylum, Prestwich (proposed by David Orr, N. J. H. Gavin, and Bedford Pierce); Alfred Wilson Daniel, B.A., M.D., B.C.Cantab., M.R.C.S., L.R.C.P.Lond., Senior Assistant Medical Officer, London County Asylum, Hanwell (proposed by Percy J. Bailly, Percy Spark, and C. Hubert Bond); Mary Edith Martin, L.R.C.P.&S.Edin., L.F.P.S.Glasg., L.S.A.Lond., House Surgeon, Lewes Road Hospital, Brighton (late Medical Officer, Victoria Settlement, Liverpool (proposed by A. Helen A. Boyle, Robert Jones, and C. Hubert Bond); Arthur Edward O'Reilly, L.R.C.S.I., L.&L.M.R.C.P.I., Assistant Medical Officer, North Riding Asylum, Clifton, York (proposed by John B. Tighe, A. I. Eades, and Bedford Pierce); Ernest Septimus Reynolds, M.D.Lond., B.Sc.Vict., F.R.C.P.Lond., Assistant Physician, Manchester Royal Infirmary, 2, St. Peter's Square, Manchester (proposed by Bedford Pierce, David Orr, and William Starkey); Henry Watson Smith, M.B., Ch.B., Assistant Medical Officer, Durham County Asylum, Winterton, Ferryhill (proposed by Wm. St. J. Skeen, John W. Geddes, and C. Hubert Bond); John Archibald Taylor, M.B., Ch.B.Edin., Assistant Medical Officer, County and City Asylum, Powick, Worcester (proposed by Geo. M. P. Braine-Hartnell, H. T. S. Aveline, and C. Hubert Bond).

### IRISH LUNACY LEGISLATION.

The PRESIDENT said that at the Council meeting which had just been held the following resolution was passed, and he had been requested to bring the matter

before the general meeting: "That the Medico-Psychological Association of Great Britain and Ireland approves of the resolutions passed by the Lunacy Legislation Sub-Committee of the Parliamentary Committee of the Association with reference to Irish lunacy legislation, on April 3rd, 1907, and also those by the Irish Division, passed on April 11th, 1907 (with the exception of the concluding paragraph), and that a copy of this resolution be forwarded to the Chief Secretary to the Lord-Lieutenant of Ireland." Those present were aware that there were impending changes, which had been discussed in Parliament, with regard to lunacy matters in Ireland, and the Council of that Association had taken certain steps to place certain resolutions before the Chief Secretary. They related in part to the admission of patients, in part to the care of patients, and in part, also, to the classification of patients, as to whether they should be in asylums or whether they should be boarded out. Dr. Dawson, the Secretary for Ireland, was present, and he could briefly explain to the meeting what had been done.

Dr. Dawson said that when it became a matter of common report that a Bill to amend the Irish administration was being drafted it seemed desirable that certain considerations connected with lunacy administration in the country should be brought before the framers of the Bill. He therefore wrote to the Secretary of the Parliamentary Committee, who summoned a special meeting of the Legislation Sub-Committee, and that Sub-Committee at their meeting adopted certain resolutions, which were forwarded to the Chief Secretary for Ireland. He would state to the meeting what was the gist of those resolutions. One was that the usual method of certification for admission to the Irish public asylums required amendment. The second set forth that facilities should be provided for the admission of voluntary boarders in Irish asylums. Thirdly, that provision should be made for boarding out pauper patients. Fourthly, that the chronic insane were more likely, in the opinion of the Sub-Committee, to be treated properly in annexes to existing asylums rather than in workhouses or other institutions with separate administration. Fifthly, that there should be an extension of the Idiots Act to Ireland. Sixthly, that the qualifications of the Resident Medical Superintendent, as set forth in the Irish Local Government Act, should be retained; and that the mode of election of medical officers should be clearly defined by statute; and, in order to secure a better class of nurses, that superannuation of the officers should be made compulsory. Finally, that with the extended duties and responsibilities, an increase in the numbers and in the powers of the inspectors of lunatics in Ireland is necessary. In addition to that, and partly by the suggestion of the President and other members of the Sub-Committee, he brought the matter before the Irish Division, at a meeting on April 11th, and they passed a resolution, which was a little more strongly worded, perhaps, but essentially the same as that forwarded by the Sub-Committee of the Association. The only important addition made was one stating that in the event of any legislation dealing with Irish lunacy matters an enactment should be introduced whose object was to extend to Ireland the provisions of the Act of Settlement concerning the matter of the deportation of pauper lunatics. The object of that was to place Ireland in the same position as Scotland at present occupied. In Scotland, if a person belonging to any other part of the United Kingdom—England, Ireland, or Wales—became insane, and had not been for twelve years in one situation, he could be deported to the place of his birth, whereas in Ireland there were no corresponding powers for deporting Scotsmen or Englishmen to the places of their birth; they were obliged to keep them in Ireland. But Ireland did not want to keep them, and it was with the object of assimilating the legislation of Ireland to that of Scotland in that respect that the clause was introduced. It was a matter which was regarded by the asylum medical officers in Ireland as one of importance. The other point to which the Council of the Association took exception at their meeting that day was a mere suggestion, and did not form an essential part of the recommendations of the Irish Division; but as it was specially mentioned in the resolution he thought it would be better to read it: "In connection with the above suggestions, the question of converting the asylum service into a national service might well receive consideration. Weighty arguments have been brought forward lately in support of this step in the case of the Poor-Law service, and any such arguments on the grounds of justice, efficiency, and economy, may be urged with even greater force regarding the asylum service."

Dr. DRAPES seconded the resolution, and on being put to the meeting it was carried unanimously.

#### THE DEATH OF DR. CHARLES FÉRÉ.

Dr. URQUHART said that, with the kind permission of the President, he desired to call the attention of the meeting to the death of Dr. Charles Féré, which took place on April 10th. He had been an honorary member of the Association since 1892, and his name was very familiar to everyone as a distinguished physician, and as an indefatigable worker in the speciality. He was sure those who had the honour and privilege of his personal friendship must regret his death very much. Dr. Urquhart said he did not wish to detain the meeting with a recital of his brilliant achievements in psychiatry, to which, however, he would return later in the JOURNAL. He merely desired that the President might convey to Madame Féré their deep sense of loss by his death, and their feeling of condolence with his family.

The PRESIDENT said he was sure every member of the Association would agree to that. Dr. Féré had been an honorary member for the last fifteen years, and a very valuable and distinguished one.

It was agreed that the general secretary should enter on the minutes an expression of profound sorrow and regret occasioned by the calamity to medical science, so premature and unexpected, and that he should convey to Madame Féré and family their sincere and respectful sympathy.

The PRESIDENT referred to an assault on Dr. John Carswell by an insane person, who recently shot him because he had failed to recover damages from Dr. Carswell in the Court of Session. The President moved, and it was agreed that the general secretary should be instructed to enter on the minutes the regret of the meeting, and to convey to Dr. Carswell the expression of their sincere sympathy, and hopes for his early recovery.

#### WORKMEN'S COMPENSATION ACT.

The PRESIDENT called on Dr. HAYES NEWINGTON, who, in accordance with notice given, made the following statement:

"It is a matter of common knowledge that the Workmen's Compensation Act of last year has imposed fresh responsibilities on all classes of institutions for the insane; and it is also very generally known that insurance offices have taken a view of the risks connected with work in asylums that will appear exaggerated to us, who are in constant touch with the insane. Most will know, too, that several of the principal offices have joined together to establish a uniform tariff for all accident risks, no departure from this tariff being permitted. There are other offices which have not joined this combination, and underwriters at Lloyds are entering freely into the business created by the new Act. Both the non-tariff offices and Lloyds seem disposed to be less apprehensive of the risks, and they in many cases offer lower terms. Into the intricate question of the relations that are supposed to exist between higher prices and increased security I do not propose to enter, but it may be stated with certainty that the contemplated scale of premiums has but little relation to actual experience. It is not too much to say that, for want of proper data on which to found reasonable calculations, every one is at sea in attempting to estimate risks. Insuring corporations very naturally wish to protect themselves, and no doubt when fixing their rates they have been largely guided by obsolete ideas of the interior of asylums and of the life therein. A relic of the past, indeed, is the frequent appearance of the term 'keeper' in combination with 'attendants and nurses' in schedules of rates. Doubtless if it could be shown that the rates asked were beyond requirements, business instincts would lead to their being reduced to a point that could be justified by facts.

"I propose to give one or two illustrations of the effect of tariff rates in order to show that some reconsideration is called for. Domestic servants of all kinds can be insured for 3s. each. Taking the wages and allowances of, say, a parlour-maid at £50 per annum, the sum first quoted would mean a rate of 6s. per £100



of wages and allowances combined. We may take the same average value of wages and allowances for the asylum nurse, but the rate asked for her is not *6s. per cent.*, but *20s. per cent.* It follows that the ordinary domestic risk which is present, and must be met in both cases, is in the instance of the nurse loaded with *233 per cent.* for the special asylum risk. Now we all know, in fact we have always insisted in relation to the pension question and we still insist, that there is a considerable risk, but we cannot admit for a moment that the calling is hazardous to the extent indicated by such a differentiation. Nor is this all. We should, I think, be unhappy if, say, *10 per cent.* of our patients could at any time be considered to expose those in charge of them to special risk by reason of homicidal propensities, or from a turbulence of disposition such as would lead directly or indirectly to injury by violence. If this is so, then the payment of the higher premium asked for over all the nursing staff would have the effect of enormously increasing a charge that we may well think to be already inordinately high. Again, I estimate from figures at my disposal that the payment of the tariff rate for attendants and nurses only in the county and borough asylums of England and Wales would exceed £6000 per annum. Will it not be difficult in our experience to recall assaults and accidents sufficient in frequency and gravity to absorb even a fraction of this sum? The same excessive fear of risks is reflected in the charges for other asylum officers who are not in direct charge of patients.

"The only method of obtaining approximate accuracy of estimate is to get records of facts during the last few years, and it would appear that this Association alone possesses the machinery for conveniently obtaining and elaborating these facts. I think I may say with some authority that insurance offices will welcome sound information, while our own position will be the stronger if we have it to support our opinion as to what will be a just and proper scale of rates for our service.

"Before moving the resolution, which aims at giving effect to these views, I should wish to point out another direction in which the Association can do a neighbourly action. Let us think for a moment on the large number of attendants and nurses earning their living outside institutions, and let us think of what might befall the head of a house driven by emergency to call in the aid of any of them. In such a case it would be practically certain that his risks would not at first be covered by a policy, while it might well be that his danger would never be brought home to him till injury had turned the risk into accomplished loss. Then if a nurse comes from a registry, who employs her, the head of the house or the proprietor of the registry? Would the service, under any circumstances, be deemed to be casual and therefore excluded from the benefits of the Act? These and similar questions can best be raised and considered on general principles with a due regard to the protection of all interests by the agency of our Association. For instance, our knowledge of this branch of nursing might enable us to make such a suggestion as that a nurse should be allowed to insure herself, thus carrying immunity to all who engaged her, the remuneration being suitably increased. In any case the Association can secure immediate and efficient consideration of the interests of many who owe their allegiance to us.

"As the motion shows it is sought to appoint a small committee to take necessary action. The Committee must consist of those who can readily meet and consult together, as time is so short. I might say that the necessity for taking action at all has only been caused by the establishment of the tariff a few weeks ago. Before that time competition promised to lead to a proper adjustment of rates. The reference to the Committee is shown in the motion but perhaps it will be wise to point out that it is not asked that the Committee shall have power to agree to anything in the name of the Association—indeed, no such power could be given. It will therefore be useless for anyone to suggest terms or conditions implying the approval of the Association. All that the Committee can do will be to ascertain and communicate facts, and to exert any influence that it may have in procuring for these facts due appreciation. It will be for the insurance offices to complete the task by offering, either individually or conjointly, such rates as appear to be justified by the circumstances."

Dr. Hayes Newington begged to move the appointment of a committee, and if the Association agreed to it, he would propose that it consist of the President (Dr. Jones), Dr. Percy Smith, Dr. Outterson Wood, Dr. Hyslop, and himself.

The PRESIDENT said the association was very much indebted to Dr. Hayes Newington. £6000 a year was a very great price for insuring the nursing staff of the institutions for the insane in this country, and he thought that too gloomy a view was taken of their risks. The course suggested would be a great help to those who are administering asylums.

Dr. OUTTERSON WOOD seconded the proposition, and it was agreed to.

Dr. R. C. STEWART asked when the Committee was likely to report, because his asylum was dealing with the question, and such information would be very valuable if it could be received in time. Could it be had in three or four weeks?

Dr. HAYES NEWINGTON, in reply, said it was hoped, if the committee was appointed, that a short meeting might be held that day, at the close of the general meeting, to approve the necessary form. A form was ready for settlement by the committee, which would be sent round to the superintendents of every asylum, registered hospital, and licensed house, with the request that particulars should be sent in as soon as possible. The main question which would be put to medical superintendents would be, What number of injuries resulting from the action of patients occurred within so many years involving permanent incapacity or temporary incapacity? He was personally in communication with several insurance offices, and he hoped that the committee would meet some representatives of those bodies, if desired, and put the facts before them. The result would be seen in the lower rates issued.

Dr. R. C. STEWART asked whether Dr. Hayes Newington could give the meeting any information with regard to what the County Council would do. He had information on the preceding day from his own County Council that they were not sure whether they would have to insure the superintendent and medical officers. They were going to have another meeting of the County Councils' Association before very long to consider that matter.

Dr. HAYES NEWINGTON, in reply, said that was a legal question. It was curious that one office did express an opinion, in spite of the apparent plainness of the Act, that the medical officer would come within the Act, although his salary and allowances exceeded £250 a year. But he thought that that was probably wrong. He believed it might be taken as certain that the medical superintendent and other officers who received £250 money and allowances were outside the Act. With regard to what the County Councils would do one could not say, because each Council was acting for itself. But he knew that in some cases they proposed to hold their judgment over until they received further information, if it could be got, from the inquiries made by the Committee of the Medico-Psychological Association.

Dr. D. G. THOMPSON asked whether it might be assumed that the Committee would report at the next quarterly meeting of the Association, *i.e.*, at the annual meeting. There would be no council meeting until then, so it would be three months hence.

Dr. HAYES NEWINGTON said the Committee would report as a matter of routine, but before the Association met again any good it could do would have been done. The most they could do was to make representations, and take such action as they thought fit.

Dr. FORD ROBERTSON read a paper contributed by himself and Dr. Douglas McRae, entitled "Further Bacteriological and Experimental Investigations into the Pathology of General Paralysis and Tabes Dorsalis." See p. 590.

In consequence of the lateness of the hour it was agreed to defer the other paper announced on the agenda until the annual meeting.

In the evening between thirty and forty members and their friends dined together at the Café Monico.

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## SOUTH-EASTERN DIVISION.

The SPRING MEETING of the South-Eastern Division was held by the courtesy of Dr. F. R. P. Taylor at the East Sussex County Asylum, Hellingly, on April 17th, 1907.

Among those present were Drs. Robert Jones (President), H. H. Newington, Crochley Clapham, A. Helen Boyle, Josephine Brown, A. S. Newington, J. Francis Dixon, Richard Whittington, P. D. Hunter, E. S. Pasmore, Thomas O'C. Donelan, B. Hart, M. A. Collins, J. P. Race, W. T. Crawford, F. W. Stewart, C. H. Fennell, William Rawes, Thomas B. Worthington, William Ireland Donaldson, Francis H. Edwards, H. A. Kidd, A. Rotherham, H. Stilwell, David Hunter, G. N. O. Slater, R. H. Cole, H. E. Haynes, F. R. P. Taylor, and R. H. Steen (Hon. Sec.).

The visitors included Dr. Jeffery (member of the Visiting Committee), and Drs. Henry Colegate, E. Faulks, Edith Martin, and Herbert Berncastle.

Apologies were received from Drs. Crookshank, Boycott, Douglas, T. Outterson Wood, A. Bowles, Harvey Baird, Chambers, Moore, Smith, and Langdon-Down.

The asylum and grounds were inspected, and subsequently Dr. Taylor entertained the members to luncheon. At the termination of the lunch the President proposed a vote of thanks to Dr. Taylor for his kindness in so hospitably receiving the Division.

The meeting of the Divisional Committee was held at 2.30, Drs. Rawes, Hunter, Slater, Donaldson, and Steen being present.

The general meeting of the Division was held at 3 p.m., Dr. Robert Jones in the chair. The minutes of the last meeting having appeared in the JOURNAL were taken as read and confirmed.

The following members were elected by voting papers to take office for 1907-8: Hon. Secretary of the Division.—Dr. R. H. Steen.

Representative members of the Division on the Council.—Drs. Boycott, Fennell, Mercier, E. W. White.

The following gentlemen were elected as ordinary members of the Association: George A. Fleming, L.R.C.S.I., L.R.C.P.I., Lic Rotunda Hospital; Assistant Medical Officer, Camberwell House.

George Henry Keene, M.D.(T.C.D.), Assistant Medical Officer, Essex County Asylum, Brentwood.

George Ernest Peachell, M.B., B.S.(Lond.), M.R.C.S.(Eng.), L.R.C.P.(Lond.), Assistant Medical Officer, West Sussex County Asylum, Chichester.

Charles Mollyson Smith, M.B., Ch.B.(Aberd.), Assistant Medical Officer, Kent County Asylum, Barming Heath.

Charles E. C. Williams, B.A., B.Ch., M.B.(Dub.), Assistant Medical Officer, Holloway Sanatorium, Virginia Water.

Drs. Taylor, Reginald Langdon-Down, and Dixon were elected as members of the South-Eastern Divisional Committee of Management, which now consists of the following:

<i>Retire in 1908.</i>	<i>Retire in 1909.</i>	<i>Retire in 1910.</i>
Dr. Boycott.	Dr. Donaldson.	Dr. Taylor.
Dr. Kennedy Will.	Dr. Crookshank.	Dr. R. Langdon-Down.
Dr. G. N. O. Slater.	Dr. Stoddart.	Dr. Dixon.

A letter was read from the Hon. General Secretary requesting the Division to ascertain the names of members willing to serve on the National Committee of the International Commission to co-ordinate the work of studying the causes of mental disease and their prevention.

The following were nominated by the meeting, and the Divisional Secretary was instructed to communicate with those not present to ascertain if they were willing to serve: Drs. Robert Jones, Mercier, Bond, Mott, Hyslop, Rawes, and John Turner.

The invitation of Dr. Reginald Stilwell to hold the autumn meeting of the Division at Moorcroft, Hillingdon, was unanimously accepted with much pleasure. The date was fixed for October 8th, 1907. April 21st, 1908, was fixed for the date of the spring meeting.

Dr. CHARLES H. FENNELL read a paper on "The Care of Children in County and Borough Asylums" (see p. 541).

Dr. TAYLOR showed the case of a female patient (E. B.) suffering from recurrent insanity associated with ophthalmia. He stated that the patient had been in the asylum three times. On the first occasion she was restless and depressed on admission, but on the others was suffering from acute excitement. On each occasion, shortly after admission, she developed ophthalmia, which was characterised by severe pain, swelling of the eyelids, and conjunctivitis. Whilst the inflammation of the eye was present the patient was quite well mentally. The ophthalmia lasted about a fortnight and then got suddenly better, the patient at this time becoming mentally worse, at first being somewhat depressed and then passing into a condition of acute mania, during which she was extremely restless and noisy, and had marked hallucinations of hearing and of sight. This condition lasted about a fortnight to three weeks, and then she became well mentally. On two occasions she had a relapse within two months, each relapse being preceded by ophthalmia; then she became well, and was discharged recovered. On the first occasion she stayed in one of the asylums four months and on the second six months. She was twenty-seven years of age on first admission. She is stated to have had an attack of insanity when seventeen years of age, but was not in an asylum. No history of hereditary predisposition was obtained. When well patient is of good intelligence.

Dr. CRAWFORD described the last attack. She was admitted to the Asylum on March 7th, 1907, having been discharged on August 25th, 1906. She was in a condition of simple excitement of a joyful nature. She had opacity of the right cornea and some conjunctivitis. Within a few days of admission she became much better mentally. She now complained of severe pain at the back of the right eye and in the temporal region. The eyelids and conjunctiva became very much swollen, and the cornea was covered with flaky deposit, but there was no ulceration. The eye was fomented, washed out with boracic lotion and atropine instilled. Patient was quite well mentally. A fortnight later the eye got rapidly well, and patient passed into a condition of acute mania. She remained excited for about a week, and then became quite well.

The PRESIDENT proposed that the thanks of the Division should be sent to the Chairman and Visiting Committee for the great privilege they had in holding their meeting at the East Sussex Asylum, and of seeing the very full and complete arrangements made at that institution for the care, curative and custodial, of those suffering from every form of mental disease.

This was unanimously agreed to, and it was requested that the Divisional Secretary should convey the thanks of the Division to the Chairman.

Dr. JEFFERY, on behalf of the Visiting Committee, replied.

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#### SOUTH-WESTERN DIVISION.

The SPRING MEETING of the Division was held at the County and City Asylum, Burghill, Hereford, on Thursday, April 18th, 1907.

The members were kindly entertained to lunch by Dr. Morrison, who subsequently showed them over the Asylum.

The following members were present: Drs. Baskin, Braine-Hartnell, Bullen, Glendinning, Jex-Blake, W. F. MacDonald, Morrison, Nelis, Rambaut, Soutar, and the Hon. Div. Sec.

The visitors were Drs. Thos. Turner, Edgar Morris, J. Oswald Lane, Herbert Jones, Warren Swettenham, Arthur Wood, and Thos. Mendes.

Dr. Glendinning was voted to the Chair.

The minutes of the Autumn Meeting were read and signed.

Letters from the relatives of the late Drs. Craddock and Stewart returning thanks for votes of sympathy were also read.

The following candidates were elected members of the Association:

Humphrey P. Blackmore, M.D., Physician, Salisbury Infirmary. Proposed by Drs. Baskin, Aveline, and W. F. MacDonald.



James Whigham Rutherford, L.R.C.P.I., L.R.C.S.I., L.M., Assistant Medical Officer, Somerset and Bath Asylum, Cotford, near Taunton. Proposed by Drs. Aveline, Rorie, and W. F. MacDonald.

Mr. H. T. S. Aveline was re-elected Hon. Divisional Secretary, and Drs. Goodall and Bullen representative members on the Council.

Drs. Baskin and Goodall were elected on the Committee of Management, and Dr. Soutar kindly consented to act for a further period of twelve months in place of the late Dr. Stewart.

The next meeting was fixed to take place at Fisherton House, Salisbury, on Friday, October 25th next, by kind invitation of Dr. Baskin, and the Spring Meeting at Barnwood House, Gloucester, on Friday, April 24th, 1908, by kind invitation of Dr. Soutar.

Dr. Baskin exhibited his new form of case for the protection of clinical thermometers during use, and gave a short explanation.

Dr. W. F. MacDonald read a paper on the "Bacteriology of Asylum Dysentery," describing the clinical features of cases coming under his notice and pointing out their association with the presence of a bacillus of the Flexner type.

The paper was discussed by the Chairman, Drs. Soutar, Morrison, Braine-Hartnell, and the Hon. Div. Sec., and Dr. MacDonald suitably replied.

Dr. Morrison read a paper on "The Inference of Degeneracy in Herefordshire supplied by Vital and Medical Statistics," and the important conclusions drawn were commented on by several of the visitors.

On the motion of the Chairman a hearty vote of thanks was accorded to Dr. Morrison for the hospitable manner in which he had received and entertained the members, and also for his most able and interesting address, and the proceedings closed with a vote of thanks to Dr. Glendinning for presiding.

#### NORTHERN AND MIDLAND DIVISION.

THE SPRING MEETING of the Northern and Midland Division was held, by the courtesy of Dr. Perceval, at Lancashire County Asylum, Prestwich, near Manchester, on April 18th, 1907. Dr. Perceval presided.

The following members were present:—Drs. Stewart Adair, Archdale, Legge, Cowan, MacDougall, Mackenzie, Macphail, Pierce, Middlemass, G. E. Mould, Orr, Powell, M. Rhodes, Rows, Simpson and Starkey. There were seven visitors.

1. The minutes of last meeting were read and confirmed.

2. John Exley, L.R.C.P.I. and M.R.C.S., Medical Officer to H.M. Prison, Leeds, was unanimously elected a member of the Association.

3. It was resolved to suggest the names of Dr. Bedford Pierce and Dr. Richard Legge to the Council as members of the International Committee on the Causes of Insanity.

4. Dr. Bedford Pierce was re-elected Secretary to the Division.

5. Drs. T. W. McDowall and Ewan were unanimously re-elected Representative Members of Council.

As it was expected that the number of members of the Division would reach 150 next month Dr. David Orr was unanimously elected Representative Member of Council in place of Dr. Edgerley who retired.

6. Cordial invitations having been received from Dr. Stewart Adair and Dr. Middlemass, it was decided to hold the Autumn Meeting at the Sunderland Borough Asylum, at Ryhope, on October 17th, and the Spring Meeting next year at the Storthes Hall Asylum, near Huddersfield, on April 30th, 1908.

7. Dr. Clarke was unavoidably prevented from reading the paper announced in the agenda.

8. The meeting adjourned to the Laboratory, and Dr. David Orr and Dr. Rows demonstrated a number of recent researches in Pathology, in particular the effect of toxins upon the brain and spinal cord, showing the degeneration produced by toxins reaching the central nervous system along the peri-vascular lymphatic channels.

Specimens were also shown demonstrating the presence of a specific micro-organism in the walls of the alimentary canal, and in the spinal cord in a case of acute insanity.

After the meeting ten members and three visitors dined at the Midland Hotel.

## SCOTTISH DIVISION.

A meeting of the Scottish Division of the Medico-Psychological Association was held at Ayr District Asylum, Glengal, Ayr, on Friday, March 22nd, 1907.

The following members were present:—Drs. Baugh, Easterbrook, Gostwyck, Havelock, Hotchkis, Carlyle Johnstone, Keay, Kerr, A. R. MacIntyre, MacIlraith, McMillan, McRae, Marr, G. M. Robertson, Turnbull, Urquhart, Wilson, and Bruce, Divisional Secretary.

Dr. Carlyle Johnstone was called to the chair.

Letters of apology were intimated from Dr. Robert Jones (President), Sir William Gairdner, Drs. Campbell, Ireland, Marshall, A. Robertson, and Watson.

The minute of last meeting was read, agreed to, and signed.

Drs. Turnbull and Bruce were appointed Representative Members of Council, and Dr. Hamilton C. Marr, Divisional Secretary.

Applications for admission as members were received from:—Patrick Steele, M.B., Ch.B.(Edinburgh), Assistant Medical Officer, Edinburgh District Asylum, Bangour, Uphall (proposed by Drs. Keay, Rutherford, and Bruce); and Stewart Carlisle Howard, M.B., Ch.B.(Aberdeen), Assistant Physician, Perth District Asylum, Murthly (proposed by Drs. Urquhart, Bruce, and Alcock).

After ballot these applicants were declared unanimously elected.

Dr. EASTERBROOK showed the members over the new hospital, and gave a clinical demonstration upon a few cases of special interest.

Drs. Urquhart, Ireland, Marr, Easterbrook, Ford Robertson, and G. M. Robertson were nominated members of the National Committee appointed to co-operate in the work of studying the causes of mental diseases and their prevention.

Dr. URQUHART gave the following notice of motion:

"That the Division at the next meeting proceed to elect a Business Committee for the Scottish Division, that it consist of three members who are at the same time ordinary members of the Council and of the Association."

Votes of thanks to the Chairman and Dr. Easterbrook terminated the meeting.

The members afterwards dined together in the Ayr Station Hotel.

## IRISH DIVISION.

THE SPRING MEETING of the Division was held at Portrane Asylum on Thursday, April 11th, 1907, by the kindness of Dr. Donelan, who entertained the members at luncheon after first escorting them round the Institution.

At the meeting afterwards the chair was occupied by Dr. Donelan, and there were also present:—Drs. M. J. Nolan, T. Drapes, F. O'Mara, H. M. Cullinan, R. R. Leeper, J. J. Fitzgerald, H. M. Eustace, F. E. Rainsford, M. J. Forde, and W. R. Dawson (Hon. Sec.).

A vote of sympathy with the relatives of the late Dr. R. A. L. Graham was passed unanimously.

A letter regretting inability to be present was read from the President of the Association.

The minutes of the previous meeting were read, confirmed, and signed.

A letter was read from Mrs. Woods, thanking the members of the Division for the vote of condolence passed at the last meeting.

Dr. W. R. Dawson was elected Divisional Secretary, and Drs. M. J. Nolan and T. Drapes Representative Members of Council, for the ensuing year.

The dates of the meetings of the Irish Division in the ensuing year were fixed as follows:—Tuesday, November 5th, 1907; Thursday, April 30th, 1908; and Thursday, July 2nd, 1908.

Dr. Nolan cordially assented to the unanimous wish of the members that the Summer Meeting should be held at Downpatrick Asylum.

The names of Drs. Norman, Nolan, and Dawson were directed to be forwarded to the General Secretary for service on the National Committee of the proposed International Commission for the Study of the Causes and Prevention of Mental Diseases.

The SECRETARY reported that, the matter being urgent, he had ventured to send a memorandum to the Parliamentary Committee suggesting certain changes in the Lunacy Law of Ireland, with the request that they would bring the subject under the notice of the framers of the proposed Irish Council Bill. The Lunacy Legislation Sub-committee had met on April 3rd and drawn up a modified resolution, which had been forwarded to the Chief Secretary for Ireland.

The action of the Secretary was approved, and after a prolonged discussion a modification of his Memorandum was agreed on, and copies were directed to be forwarded to the General Secretary in time for the May General Meeting of the Association, and to the Royal Commission on the Feeble-minded. The amended Memorandum was essentially the same as that of the Lunacy Legislation Sub-Committee, as published in the April number of the JOURNAL, with the addition of the following clause :

" In the event of any legislation dealing with Irish Lunacy matters, an enactment should be introduced to extend to Ireland the provisions of the Act of Settlement in the matter of deportation of Pauper Lunatics."

It was also suggested that the question of the conversion of the asylum service into a National Service might receive consideration.

The following were constituted a Committee to watch the Irish Council Bill, and if necessary take action, with reference to lunacy administration :—Drs. Rainsford, O'Mara, Norman, Donelan, W. Graham, Nolan, Fitzgerald, Leeper, Drapes, and Dawson.

A vote of thanks to the Secretary for his action in the matter was passed unanimously, and he replied.

#### COMMUNICATION.

Dr. R. R. LEEPER read a paper entitled " Notes on some Cases of Melancholia."

The proceedings terminated with a cordial vote of thanks to Dr. Donelan for his kind hospitality.

#### OBITUARY.

##### DR. CHARLES FÉRÉ.

Charles Samson Féré was born at Auffay, in Normandy, half way between Dieppe and Rouen, on the 13th June, 1852. He began his medical studies at Rouen in 1870, and, two years later, proceeded to Paris, where he had the advantage of such teachers as Broca, Guériot, Panot, and Guyon. At that time he desired to become a surgeon, but he fell under the powerful influence of Charcot at the Salpêtrière, and thereafter devoted himself to neuropathology. His inaugural thesis (1882) was entitled *Functional Disorders of Sight caused by Cerebral Lesion*. In 1884 he was successful in the competition for the appointment of Assistant Physician at the Salpêtrière, and in 1887 was promoted to the post of Chief Physician at the Bicêtre, which he held until his untimely death.

I do not intend to present even a short account of the work accomplished by Féré, which is, on the whole, familiar to those interested in psychiatry. Hypnotism, hysteria, the heredity of degeneration, criminals, and epileptics have been the subjects of his special scientific investigations. His earlier study of surgery had rendered him a good anatomist, and resulted in the publication of his useful book on the anatomy of the nervous system. Philosophical researches had a strong attraction for Féré, and issued in the contribution of many papers on the pathology of the emotions, on sexual instinct, on work and pleasure, on the disorders of intellect. For a considerable number of years he was a member of the Society of Biology, and submitted most interesting and important studies on muscular work, on the physiology of voluntary movements, on sensory excitations, on muscular fatigue, on teratology, and on teratogeny from the experimental standpoint.

Féré was a tall man, with a long black beard, a high broad forehead, large and pensive eyes. His strongly marked features were expressive of a gentle melancholy. At a first glance he appeared rather rough and cold in manner, but he was truly kind, gentle, and exquisitely sensitive. Féré led a simple life, and sought neither honours or rewards. His life was passed in the hospital, the laboratory,

and the library, constantly at work in spite of frequent and severe headaches. His indomitable will and steady perseverance did not fail until he was completely exhausted. He died on the 22nd of April.

During the course of his too short life he maintained his sweet remembrance of his beloved Normandy, of the ancient city of Rouen, and especially of his native village. He liked to speak of Auffay and its Roman origin—the place of the high beech tree. There he lies at rest—*sub tegmine fagi*.

#### A LIST OF THE MORE IMPORTANT OF FÉRÉ'S WORKS.

*Contribution à l'étude des troubles fonctionnels de la vision par lésion cérébrale. Thèse, Paris, 1882.*

"Notes pour servir à l'histoire de l'hystéro-épilepsie." *Archives de Neurologie*, 1882, N. 3, p. 160, 281.

"La médecine d'imitation." *Progrès médical*, 1884, no. 16; 1886, nos. 35, 36, 37.

"La polarisation psychique" (avec Binet). *Revue philosophique*, 1885.

"Sensation et mouvement." *Revue philosophique*, octobre, 1885.

"Le magnétisme animal." 1884. 4<sup>e</sup> edit. 1894.

"A Contribution to the Pathology of Dreams and of Hysterical Paralysis." *Brain*, January, 1887.

"La famille névropathique." *Archives de Neurologie*, 1884, N. 7, p. 1 et 173. 1894. 2<sup>e</sup> edit. 1898.

*Traité élémentaire d'anatomie médicale du système nerveux.* 1886 (242 figs). 2<sup>e</sup> edit. 1891.

*Sensation et mouvement, études expérimentales de psycho-mécanique.* 1887. 2<sup>e</sup> edit. 1900.

*Dégénérescence et criminalité.* 1888.

*Du traitement des aliénés dans les familles.* 1889.

*Les épilepsies et les épileptiques.* 1890. (67 grav., 12 planches.)

*Pathologie des émotions.* 1892.

"Contribution à l'histoire du choc moral chez les enfants." *Bulletin de la Société de médecine mentale de Belgique*, septembre, 1894.

"Hysteria, Epilepsy, and Spasmodic Neuroses." *Twentieth Century Practice of Medicine*. Vol. x. New York, 1897.

*L'instinct sexuel.* 1889. 2<sup>e</sup> edit. 1902.

"Les troubles de l'intelligence." *Traité de pathologie générale de Bouchard*.

*Travail et plaisir.* 1904.

RÉNÉ SEMELAIGNE.

#### FRANK SCHOFIELD, M.D.

We regret to record the death of Dr. Frank Schofield, who was for many years a colleague of the late Dr. Paul at Camberwell House. Dr. Schofield received his medical education at St. George's Hospital, where he proved to be an able and diligent student, and where he was for a time Demonstrator of Anatomy and Physiology. In his capacity as Demonstrator he had the gratification of receiving from the members of his class at the end of the session a valuable presentation. He took the diplomas of M.R.C.S.Eng. and L.S.A. in 1861, and the degree of M.D.St. Andrews in 1862. On the advice and through the influence of the late Sir Benjamin Ward Richardson, who was a life-long friend, he was appointed Assistant Medical Officer to Camberwell House in 1861. He was then in his 23rd year. His predecessor was Dr. Murray Lindsay. Later he was promoted to be Medical Superintendent at Camberwell House, and he held this post till the autumn of 1899, when the delicate state of his health compelled him to resign.

On his retirement he went with his wife and family to reside at Weymouth. For a few years he to some degree regained strength, and he enjoyed the rest from the strenuous professional life of London. In the end of last year his health markedly failed, and after a severe illness of four months' duration, borne with great patience and fortitude, he passed away peacefully, greatly beloved and keenly regretted by a wide circle of friends.



# NOMINATIONS TO SERVE ON THE INTERNATIONAL COMMITTEE RE THE CAUSATION OF INSANITY.

- BASKIN, Joseph Loughheed, L.R.C.P. & S.Edin., Medical Superintendent, Fisherton House, Salisbury.
- BOND, C. Hubert, D.Sc., M.D., Medical Superintendent, London County Asylum, Long Grove, Epsom.
- BULLEN, F. St. John, M.R.C.S.Eng., 12, Pembroke Road, Clifton, Bristol.
- DAWSON, William Richard, B.A., M.D., F.R.C.P., Medical Superintendent, Farnham House, Finglas, Dublin.
- EASTERBROOK, Charles C., M.A., M.D., F.R.C.P., Medical Superintendent, District Asylum, Ayr, Scotland.
- GOODALL, Edwin, M.D., F.R.C.P., Medical Superintendent, City Asylum, Cardiff.
- HYSLOP, Theo. B., M.D., Resident Physician, Bethlem Royal Hospital, London, S.E.
- IRELAND, W. W., M.D., Musselburgh, Scotland.
- JONES, Robert, M.D., F.R.C.P., F.R.C.S., Medical Superintendent, London County Asylum, Claybury, Essex.
- LEGGE, Richard John, M.D., Medical Superintendent, Derby County Asylum, Mickleover.
- MARR, Hamilton Clelland, M.D., F.F.P.S., Medical Superintendent, District Asylum, Lenzie, Glasgow.
- MERCIER, Charles, M.D., F.R.C.P., F.R.C.S., Flower House, Catford, London, S.E.
- MOTT, Frederick Walker, M.D., F.R.C.P., F.R.S., Director of the Pathological Laboratory, London County Asylum, Claybury, Essex, and Pathologist to the London County Asylums.
- NOLAN, Michael, L.R.C.P.&S.Irel., Medical Superintendent, District Asylum, Downpatrick, Ireland.
- NORMAN, Conolly, F.R.C.P., F.R.C.S., Medical Superintendent, Richmond Asylum, Dublin.
- RAWES, William, M.D., F.R.C.S., Medical Superintendent, St. Luke's Hospital, London, S.E.
- ROBERTSON, William Ford, M.D., Pathologist to the Scottish Asylums, 10, Morning-side Terrace, Edinburgh.
- ROBERTSON, Geo. M., M.B., F.R.C.P., Medical Superintendent, Larbert Asylum, Stirling.
- ROWS, Richard Gundry, M.D., Pathologist, County Asylum, Lancaster.
- URQUHART, Alex. Reid, M.D., F.R.C.P., Physician-Superintendent, Murray's Royal Asylum, Perth.

The above are exclusive of Drs. R. Percy Smith and J. H. MacDonald, who were nominated at Milan to serve on the International Committee.

## NOTICES BY THE REGISTRAR.

### EXAMINATION FOR THE NURSING CERTIFICATE.

List of the successful candidates at the examination for the Nursing Certificate held in May, 1907.

#### IRELAND.

*Armagh*.—Male: David McAlister. Females: Annie Vallyely, Maggie Mallon.

*Ballinasloe*.—Males: Thomas Flynn, Michael Broderick, Michael Meyers. Females: Mary Costello, Ellen Ledwith, Ellie Mannion, Bridget Flynn, Mary Donohor.

*Carlow*.—Male: John Lambe. Females: Lizzie Cummins, Maggie Roche.

*Clonmel*.—Males: Richard Maher, Patrick Dunne, Edmond Gallagher. Female: Mary Murphy.

*Enniscorthy*.—Females: Norah Gowan, Gretta Thorpe, Dermot Lee.

*Kilkenny*.—Males: Michael McEvoy, James Keane.

*Portrane*.—Males: John Dowling, Patrick Gavin, Owen O'Connor, James Morahan. Females: Annie Brosnan, Margret Coates, Hannah Garry, Annie Heenan, Kathleen Meagher, Mary Jane McCormack.

*Richmond District (Dublin)*.—Males: John Kelleher, Michael Hughes, James Scully, James Fagan, William Lee, Michael Gibney, Patrick Burns, Patrick Neville. Females: Mary Anne McCarney, Mary Clarke, Mary T. McGuire, Katie Murphy, Jane Matthews, Julia Phelan, Nellie Duffy, Lizzie Scully.

*Bloomfield House, Dublin*.—Females: Alice Wood Sampson, Gertrude Oldershaw.

*Farnham House*.—Females: Susan Fry, Margaret S. Gordon.

*St. Edmundsbury (Lucan)*.—Female: Annie Brannigan.

*St. Patrick's Hospital*.—Male: James Johnston.

#### SCOTLAND.

*Aberdeen Royal*.—Males: William Still, Robert Fraser. Females: Marjory Baxter, Helen Stalker.

*Ayr District*.—Females: Sophia S. Taylor, Jemima R. Smith.

*Bangour Village*.—Females: Jessie E. D. McCulloch, Mary J. O'Gorman.

*Crichton Royal*.—Males: Archibald Nicolson, John J. Young, David Christison, Alexander McDonald, William Richardson. Females: Jemima S. McWhannel, Amelia C. Norrie, Mary Jane Spiers, Joan Scott Young, Margaret Macauley, Maggie Ann Angus.

*Dundee District*.—Males: David F. Mudie, James R. Robertson, Andrew Guthrie, Joseph Dudley, William Aitchison. Female: Edith Weir.

*Morningside*.—Males: Patrick Sheridan, Andrew John Wilson. Female: May Cross.

*Craig House*.—Male: John William Thomson. Female: Elsie Russell.

*Gartloch*.—Males: James Thomson, Angus Laing. Females: Mary Anne Rogers, Jessie A. Waugh, Martha Baird, Anne Helena Kane.

*Gartnavel*.—Males: Alexander Watson, Clement G. Cooper. Females: Jane Gibb, Grace Allan Parvin, Agnes M. Whitson, Jeannette G. Campbell.

*Govan District*.—Males: William Winter, John A. Macauley. Females: Nellie O. O. Rennie, Annie Kerr, Elsie Burnett.

*Lanark District*.—Male: Stuart Wilkins. Females: Annie Burdett, Cathleen Dowie, Janet M. Murdoch, Elizabeth O'Hara, Catherine G. Munro.

*Midlothian and Peebles*.—Females: Susan Patterson, Jean Winton.

*Montrose Royal*.—Male: Charles Heron.

*Murray's Royal (Perth)*.—Males: William Forbes, Robert James Patton.

*Riccartsbar*.—Male: John Bruce.

*Roxburgh District*.—Male: Alexander W. Newlands.

*Smithston*.—Males: James Francis Burns, William Fowler, John Downie, George Christie. Female: Mary W. Agnew.

*Kingsseat*.—Male: George Davidson. Female: Maggie Edington.

#### ENGLAND.

*London County (Bexley)*.—Males: Alexander McKinnon, John James King. Females: Lucy Woollett, Nellie Smith, Constance E. Dozell.

*London County (Cane Hill)*.—Males: Ernest C. Hughes, Henry Wade, Charles Curry, George J. Cusack, Ernest Elliott, Frederick J. Spittles. Females: Alice M. Wilkie, Agnes E. Harris, Lily K. M. Bishop, Mary Anne Scally.

*London County (Claybury)*.—Females: Edith M. M. Errington, Margaret M. Collins, Catherine L. Pullen, Kate Guerin, Rosina A. Grimes, Violet G. Beasley, Florence E. Isard, Violet E. Ford, Florence S. Bricknell, Bride Malone, Louisa F. Franklin, Jennie Kirby, Winifred Z. Davis, Emily Lewis.

*London County (Hanwell)*.—Female: Edith E. Brazier.

*Chester*.—Male: Walter Griffiths. Females: Melinda Dilworth, Elizabeth Roberts, Polly Jones, Nellie Rea.

*Derby County*.—Males: George Hough, William Lockett, George Henry Bourne. Female: Beatrice A. Whites.

*Hants County*.—Males: Andrew J. Pharaoh, William H. Moss, Albert E. Bower, Walter T. Vine, Francis J. Smith, John Hill, James Randell, William

George Forder, Percy A. Hocking, George Elford, Albert E. Green. Females Catherine Hill, Rose Stunt, Charlotte Boast.

*Essex County.*—Males: Christopher R. Stewart, Ernest A. Sutton. Females: Mary M. Crew, Florence Holmes, Ethel F. Hamilton, Annie Althorpe.

*Devon County.*—Male: Harry Yolland. Females: Florence Hurford, Mary A. Seaward, Emma Wensley, Josephine Wiscombe.

*Herts County.*—Males: Edward Dunnadge, William Alden, Thomas Burrow, Henry G. Fassnedge, John Cunningham. Females: Nellie Bowers, Winifred Porter, Nellie Lea, Mabel J. Parfitt, Ellen Legg, Lizzie Neve.

*Kent County (Barming Heath).*—Females: Clara E. Stephens, Elizabeth I. Gray, Florence Probyn, Rose O'Brien.

*Kent County (Chartham).*—Females: Florence E. Blofield, Elizabeth Bowen.

*Middlesex County (Napsbury).*—Males: Thomas Adcock, Harry Higginson, Albert E. Crook. Female: Ada A. Hirst.

*Middlesex County (Tooting).*—Male: William J. Carver. Females: Agnes L. Sargeant, Agnes M. Pollard.

*Lancaster County.*—Males: Joseph Oakley, Richard S. Gardner, John W. Gold. Females: Mary Raleigh, Sarah H. Turner, M. Alderson, May Huddleston, Elsie Anderson, Catherine McLaughlin, Mary Allen, Margaret A. Tomlinson, Ellen Molloy, Mary Eleanor Hill, Annie I. Atkinson, Sarah G. Jolly.

*Norfolk County.*—Males: John Seaman, Robert S. Howlett. Females: Ethel A. H. May, Winifred G. Howard, Janet Purdy, Jeannie Dean, Annie G. Storey.

*Lancaster (Preston).*—Females: Annie Walsh, Martha Busby, Sarah Middleton, Mary Owen, Edith Young, Ida M. Walters, Elizabeth Williams.

*Surrey County (Brookwood).*—Males: Edward Wharf, Ernest Wm. Lovelock. Females: Charlotte M. Palmer, Annie Phillips, Elizabeth Robinson.

*Staffs County (Cheddleton).*—Female: Edith M. Taverner.

*Sussex County (Hellingly).*—Males: George R. Martin, Charles Parsons, Thomas W. W. Elliott, Horace R. Cox, Bert Cripps. Females: Amy M. Bruorton, Catherine Holland, Lily H. Daniels, Lucy B. Martin, Beatrice M. Puddephatt.

*Sussex County (Chichester).*—Females: Nellie R. Bassett, Celia Anne Humphreys.

*Warwick County (Hatton).*—Females: Maggie Raphael, Sarah Jane Lenton, Amy Annie Maguire, Lydia G. Boffy.

*Yorks (Wadsley).*—Males: Michael Minogue, Arthur E. Keenan, Albert Bell.

*Yorks (Beverley).*—Females: Edith A. Lambert, Maud Nurse, Lily Anderton.

*Birmingham City (Rubery Hill).*—Females: Mary Roberts, Florrie L. Stretton.

*Birmingham City (Winson Green).*—Males: William F. Palmer, Charles Cuttriss. Females: Charlotte Williams, Florence Smith, Alice Lowe, Cissie Hartles, Edith Williams.

*Brighton Borough (Hayward's Heath).*—Males: Thomas Gadsby, Francis W. Osmond, Amos W. Newnham. Females: Lilian M. Dawe, Beatrice E. Hill, Agnes E. Edwards, Annie A. Tate.

*Bristol City.*—Males: Alfred J. Pike, John O'Connor. Females: Charlotte Blewitt, Margaret Lewis, Henrietta Gibbs.

*Sunderland Borough.*—Male: Francis Mackie. Females: Edith Hewlitt, Lily Metcalfe, Alice M. M. Page.

*Newcastle City.*—Male: John Wm. Hornsby. Females: Catherine G. Newton, Elizabeth Denham, Christina Bacon.

*Leavesden.*—Males: Alfred J. Ashby, Arthur E. Pinner, William G. Packer, Charles H. Dear. Females: Lizzie Janes, Maud B. Jones, Ellen J. Mackintosh, Lettice L. Jullian, Minnie Crawford, Mary J. A. Corcoran, Julia F. Corcoran.

*Bethnall House.*—Females: Lille M. Dann, Agnes Cottell, Elizabeth Cassidy, Grace F. Campion.

*Bethlem Hospital.*—Male: Thomas J. Leary.

*Camberwell House.*—Female: Ellen A. Marshall.

*Holloway Sanatorium.*—Male: George H. Blaber. Females: Mabel E. Marks, Blanche B. Kirby, Florence Blackman.

*Moorcroft House.*—Male: Frederick J. Green.

*St. Luke's Hospital.*—Male: George S. Putland.

*Dartford.*—Females: Florence Morris, Adeline M. Lindsay, May Clarke.

*Storthes Hall.*—Males: Archibald T. Black, Samuel Roberts. Females: Mary J. Downes, Mary Jane Emmott, Annie McKenna, Edith Prince.

The following is a list of the questions which appeared on the paper:

1. What is a vertebra? How many are there? Give their names and position.
2. Name the classes in which foods may be arranged, and give examples of each.
3. Describe the circulation of the blood.
4. What is meant by "varicose veins"? How should bleeding from a varicose vein in the leg be dealt with?
5. What indications would suggest to you that a patient suffered from kidney disease?
6. How should a nurse act in regard to the delusions of a patient?
7. What is dementia? Mention the mental features seen in patients suffering from it.
8. How should homicidal impulse in a patient be guarded against?
9. What would lead you to suspect that a patient was suicidal?
10. A patient appears to faint; say generally what may have happened. What would you do before the arrival of medical aid?

## NOTICES OF MEETINGS.

### MEDICO-PSYCHOLOGICAL ASSOCIATION.

The sixty-sixth Annual Meeting of the Association will be held on Thursday and Friday, 25th and 26th July, 1907, at the rooms of the Association, 11, Chandos Street, Cavendish Square, London, W., under the presidency of Dr. P. W. MacDonald. There will be meetings of Committees as follows:—On Wednesday, 24th July, 1907, Parliamentary Committee at 2.30 p.m., Educational Committee at 3.30 p.m. The Council will meet at 9.30 a.m. on Thursday, 25th July.

The Annual Meeting will commence at 11 a.m. on Thursday, 25th July, when the usual business of the Association will be transacted.

2 p.m.—The President's address, after which CHAS. C. EASTERBROOK, M.D., will read a paper entitled "The Sanatorium Treatment of Active Insanity by Rest in Bed in the Open Air."

Friday, 26th July, at 11 a.m.—T. S. CLOUSTON, M.D., F.R.C.P., will introduce a discussion upon "Psychiatry as a Part of Public Medicine." ALBERT WILSON, M.D., will give a Clinical Demonstration and read a paper on "The Psychology of Crime." HENRY DEVINE, M.B., M.R.C.P., "A Case of Katatonia in a Congenital Deaf Mute," illustrated with lantern slides.

Afternoon, 2 p.m.—W. FORD ROBERTSON, M.D., and G. DOUGLAS McRAE, M.D., will communicate "Observations on the Treatment of General Paralysis and Tabes Dorsalis by Vaccines and Anti-sera." LEWIS C. BRUCE, M.D., will read a paper entitled "Clinical Observations on Certain Cases of Mental Depression."

The Annual Dinner will take place on Thursday, 25th July, at the Whitehall Rooms, Hôtel Metropole, at 7.15 for 7.30 o'clock. (Tickets One Guinea, wines included.)

Members are requested to notify their intention of dining to the General Secretary.

*South-Eastern Division.*—The Autumn Meeting will be held, by the courtesy of Dr. Reginald Stilwell, at Moorcroft, Hillingdon, on Tuesday, 8th October, 1907.

*South-Western Division.*—The Autumn Meeting will be held, by the courtesy of Dr. Baskin, at Fisherton House, Salisbury, on Friday, 25th October, 1907.

*Northern and Midland Division.*—The Autumn Meeting will be held, by the courtesy of Dr. Middlemass, at the Sunderland Borough Asylum, Ryhope, on Thursday, 17th October, 1907.

*Scottish Division.*—The Autumn Meeting will be held on Friday, 22nd November, 1907.

*Irish Division.*—The Autumn Meeting will be held on Tuesday, 5th November, 1907.



## APPOINTMENTS.

Martin, Mary Edith, L.R.C.P.&S.Edin., L.F.P.S.Glasg., L.S.A.Lond., Assistant Medical Officer to Fenstanton Licensed House, Christchurch Road, Streatham Hill.

Mercier, Charles Arthur, M.D.Lond., F.R.C.P.Lond., appointed by the Home Secretary as a Member of the Board of Visitors to the State Inebriate Reformatory at Aylesbury.

Richards, John, M.B., F.R.C.S.Edin., Medical Superintendent of the Joint Counties Asylum, Carmarthen.

Smith, Robert Percy, M.D.Lond., F.R.C.P.Lond., appointed by the Home Secretary as a Member of the Board of Visitors to the State Inebriate Reformatory at Aylesbury.

# THE JOURNAL OF MENTAL SCIENCE

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## Part I.—Original Articles.

*Medico-Psychological Association of Great Britain and Ireland. Presidential Address, delivered July 25th, 1907. By P. W. MACDONALD, M.D., Resident Physician and Superintendent, County Asylum, Dorchester.*

THE honourable position, which, through your kindness, I am privileged to occupy to-day, associates the occupant of this chair with a long roll of distinguished predecessors, and unites him as it were to a confraternity of honour which oversteps time and unites generations. But whether the initial duty of having to deliver an inaugural address is a wise one, I will not venture to say; yet I do know that the consciousness of this time-honoured custom neither tends to produce peaceful repose, nor happy thoughts during the year of probation. My immediate predecessor, Dr. Robert Jones, having so diligently covered the field of evolution, from the time of King Saul to the latest conceptions of the London County Council, I have experienced no little difficulty in finding a resting-place in any of the ordinary fields of inquiry. Assuming that the members of this Association would not expect anything new in what I might say, I have speculated whether, perhaps in directions which are not new, I might say anything which would suggest useful thought to those interested in the aims and work of our Association. On the very threshold of my task I was, as if by chance, suddenly pulled up, and found written across my path these words: "I look into my glass." Such is the title

of the short address with which I purpose troubling you this afternoon. Would that this glass were the simple artificial mirror from off the reverse side of which you and I could remove the silver coating and look into the fathomless abyss beyond ; but no, the glass is the human mental mirror of which all are possessed, some more, others less. If I propose to you to look with me into this glass at the question of the social aspect of insanity in a purely rural district, "far from the madding crowd," and which has remained untouched from the influence of large communities, it is not as a mere theoretical exercise in race evolution, but because it contains within, a further inquiry, which even in this the early part of the twentieth century may be turned to profitable account in an Association like this.

Allow me to digress for one moment while I recall to your memories the blanks which have occurred in our ranks since last annual meeting. I grieve to say the list is a heavy one, and the profession and our Association are the poorer thereby. From among our ordinary members we have lost a former President, Oscar Woods, of Cork, whose geniality and sympathetic disposition were as true a part of his sterling qualities as were his large-heartedness and steadfast friendship. In England we have to deplore the loss of three Medical Superintendents. Frederick Hurst Craddock, of Gloucester ; John Creig MacDowall, of Menston, and Robert Sloss Stewart, of Glamorgan, and in Scotland, Charles Angus, of Kingseat, each one of whom has left indelible marks of devoted and honourable services in their respective spheres of work. Dr. Dixon, of Wye House, Buxton, was not only a successful director of a private house, but an influential public man. In other branches we have lost William Lloyd Andriezen and Robert A. L. Graham, the former, one of our most distinguished workers, and the latter, a promising son of an able father. We have also lost three honorary members, who were not only distinguished alienists and physicians in their own countries, but honoured and revered members of our Association. I mean the late Dr. A. E. MacDonald, of New York, Dr. Charles Féré, of Paris, and only a few weeks ago, Sir W. T. Gairdner, of Glasgow, a past President of our Association, and of whom any appreciation in words must fail which does not convey some impression of the high moral dignity which was in Sir W. T. Gairdner

associated with an intellectual power that placed him at the head of his profession. The names of three former members of this Association I may fittingly add to the already too long list—the late Dr. Huxley, of Kent Asylum, the late Dr. Toller, of Gloucester, and the late Dr. Schofield, of Camberwell House. I think it was at the annual meeting of 1903 that a distinguished member of our Association proposed a motion of congratulation to a former Visiting Commissioner, on whom His Majesty had conferred a distinguished honour, and I am sure it will be with your concurrence that I should to-day express from this chair the deep and great regret of the whole Association on the death of the late Sir Charles Bagot, who was one of our truest and best friends. Knowing, as I do, that votes of sympathy and condolence have already been sent to the sorrowing friends of our departed members, I will only now say that in this long list there were gifted brains and great reputations, and on behalf of this Association I express the regret and grief with which we part with able, kind, and noble associates.

#### *Ratio of Insane to Population.*

For the purposes of this address I have taken a period of half-a-century in the history of the county of Dorset, during one-half of which I have been entrusted with the supervision and administration of the county Asylum, and therefore have had full opportunities of following and watching the changes or otherwise occurring in the county and incidental to the work of my life, and thus it is I am led to address you on the subject of which I venture to think I know most. In order the better to preserve continuity and to save you from the infliction of an array of tabulated statistics, often so fallacious, I have looked at the subject, I trust, without prejudice, and hope to show how the swing of the pendulum has often been affected, not in accordance with the teaching of Mother Science, or the conclusions of those whose profound ignorance of the disease led to the theory of its supernatural origin, but by the hand of time and change and men and ways. Scientific findings afford no data by which many of the variations of this swing may be determined. At the commencement of the period of this inquiry there was, according to authorised



statistics (I do not mean lunacy blue books, but the statutory registers), a ratio of 1 insane and defective person to every 307 of the population. Now if I were to argue from these figures alone, and draw conclusions from a comparison with the position of things at the present time, when on the same basis there is a ratio of 1 to every 207 of the population in the county, the outlook would indeed appear extremely black. Let us look into this for one moment. In the fifties there were in the county of Dorset scores and scores of feeble-minded persons of all ages, living free and simple existences in the villages, unknown to blue-book statistics, and unknown to the lunacy laws. It may be that a percentage of these—I do not mean the typical village “fool,” for he exists now—were not at all times kindly cared for, still they were not reckoned or taken into account in working out the ratio of the insane to the population. How then can arguments be built or conclusions drawn from such a fallacious method of preparing statistics. It is both wrong and misleading.

Since the seventies, and for reasons well known to all, the weak, the defective, and the wreckage of human ruin and decay have been gathered into the institutions of this country, until the public have become alarmed, nay more, staggered, at the annual cost or up-keep of these hordes of human beings, and the perennial balloons of race degeneracy have been flying high and far. We have recently been warned against hasty conclusions based on general statistics, and a pious hope has been expressed that local attempts would be made to deal with one of the gravest problems for the future of this country. If we take the period since 1875 we are on surer ground, not that I wish you to believe or to think that I have pinned my faith on this or any other source of information, based on figures alone. In the last published volume of the *Lunacy Blue Book*, the Commissioners state with a frankness worthy of emulation that owing to the presence of foreign or out-county patients in many asylums their statistics fall short of accuracy. Now in the case under consideration no such inaccuracy can arise, as every foreign element has been excluded, and thus we are left to deal with the home-bred article. A quarter of a century ago first admissions were in the ratio of 1 to 307 of the population, to-day the ratio is 1 to 207. Without further explanation these figures appear as ominous as if we had dealt with the earlier

part of the period, when, as we have already seen, the figures fell very short of representing the true state of things. In all such inquiries as the present the first and cardinal principle is to throw your net as wide as possible, and for this purpose we must look at the social conditions as represented by the birth-rate and the important question of migration. During the period since the census of 1851 the decline in the birth-rate of the county, when corrected according to the methods now most adopted, amounts to 30 *per cent.* This is in keeping with what has been happening throughout the country as a whole, but in a sparsely populated part like Dorset the consequences, as we shall presently see, are even more disastrous than where the persons per acre are more numerous. A declining birth-rate and steady flow of migration have resulted in a net loss of 82,000 persons to the county during the period of fifty years, which means that the stationary proportion of enumerated natives is less than 65 *per cent.* Having arrived at this point, we are now in a position to consider the relative value of the ratio of first admissions to the population, and what, if any, changes have taken place. In an earlier part of this address I promised not to weary you with tabular statements, but you must forgive me for introducing here what occurred during the decade ending 1881. For this period the excess of births over deaths was 22,564, yet there was at the end of the period a fall of 4,028 in the population, which means that during these ten years the county suffered a net loss of 26,500 persons by migration, or at the rate of 2,500 per annum. From the start to the finish it was a case of all loss and no gain.

I think it was Ruskin who said, "In some far away and yet undreamt of hour I can even imagine that England may cast all thoughts of possessing wealth back to the nations among whom they first arose." May I venture to apply these sentiments to the county of Dorset, of whom I may with truth say, she has given much of her human peasant wealth to the ungrateful cities of England, there to be launched, not among the submerged tenth, but on the flood-tide of the race for supremacy in the eternal struggle for existence, while she has throughout these fifty years struggled against the inevitable. When the brain of the engineer and the hand of the mechanic began to replace the village peasant, the results of which have been so graphically portrayed in the history of Wessex, then there

followed the tide of village depopulation which has continued to flow ever since, until the very foundations of the backbone of this country are threatened. Provided the county had not suffered such serious losses by migration, the ratio of first admissions to the population would stand at 1 to 282, as compared with 1 to 307 in the seventies. This difference is easily accounted for when the nature of the stock-producing article is considered, and would have been wiped out had the normal birth-rate been maintained. If I have succeeded in engaging your thoughts to the thread of my argument, the simple truth amounts to this: During the fifty years there has been a slight increase in the ratio of first admissions to the population, which is not surprising, and is what might be looked for when we remember the destruction worked by the process of migration, and, as will appear under the head of causation, the enfeebled and tainted nature of many of the residue. There is no need to argue this point further, but it should be said that alarmists' statements based on hastily prepared facts conceived on a wrong issue are productive of much confusion, and, it may be, national harm. While according to the *Blue Book* of 1906 Dorset is credited with the third highest ratio, viz. 3·6 of insane to 1000 of the population, no mention is made of the conditions which have resulted in this high proportion, nor of the changes of a national character which may be reckoned as contributory factors.

At the other end of the pole, and the one most in evidence, is the accumulation of the chronic insane in our asylums, which is out of all proportion to the population. One idea is that the fault lies at the door of the 4s. grant, another that it is due to the non-discharge of the "potential insane", and yet another, the failure to requisition the services of the general hospital and poor-law physician in preference to the trained asylum physician in the treatment of early or incipient insanity. "The ill-informed public are apt to look upon a man who has a reputation for skill in a particular class of disease as of necessity unacquainted with all other diseases. We, on the other hand, maintain that of him it should be said with truth, that he is one, not who knows less of diseases in general, but who knows more of the particular class of disease to which he has devoted most time and special attention and study." I do not think it is necessary for me to enter into an argument with either school,

much as I should like to do so, but I venture to say, that while a shadow of truth may attach to each, the real cause is the unbounded confidence of the ratepayer of this country in the administration of our public asylums, and while this is so the trained and experienced asylum physician need not trouble to warn either the neurologist, visiting-physician, or the Poor-Law official off his preserves. To this confidence must be linked the changed condition of things, at any rate in the country, regarding the apparent reluctance on the part of the home circle to care for their insane relative. Is this unreasonable or unnatural? There are desirable homes supported by the rates where the patient can be nursed and cared for. At the same time the relatives themselves have a greater struggle for existence, and, therefore, through the mere force of circumstances are not in as good a position as formerly to play the rôle of the mental sick-nurse. Can you or I deny the force or truth of this? No; and while the reputed increase of the insane is more associated with an increase in the number of the registered mentally unsound than any increase in the prevalence of insanity, let us not attempt to save or mould the future of our race at the expense of the delightful personality so frequently met with in institutions for the insane. Let me warn you against beginning at the wrong end.

### *Type of Insanity.*

Having thus far dealt with the human fabric in a limited area, we may now turn our attention to the actual mental condition, and look into our glass from the clinician's point of view. Has the character of the cases remained the same, or have the forms of mental disease under any of the many systems of classification changed during these fifty years? My initial difficulty is to reconcile or bring into line the views and experience of fifty years ago with the ripe experience of the present day. Still, the difficulty is not so great after all, and he would be a bold man who would question the diagnosis of a Pinel, a Skae, a Tuke or a Bucknill. Perhaps they were not accustomed to such borrowed terms as "dementia præcox" and "manic depressive," but I venture to state that they were as competent to diagnose a true case of mania, melancholia or any of the dementias as the greatest Goliath of the present age. Under



this head much interesting information may be gleaned from the published experience of such men as Thurnam and Boyd, and I am inclined to think that the registers of our public asylums were as carefully and as accurately entered up fifty years ago as at the present time. The types of insanity exhibited by first admissions during the fifty years do not show any very startling change, yet under certain heads the change that has taken place is significant of what has been happening in the county, and clearly adds soundly-welded links to the chain I am humbly endeavouring to put together. With reference to the groups of cases falling under the head "mania," I find that the percentage has varied but little during the period. In the first decade the percentage was 49, in the last decade 48, of the total first admissions. These percentages are curiously corroborative of the figures as given by the Lunacy Commission, though not quite so high, and while on the surface of no apparent moment, yet they have a significance. Mania is the only type which does not show a clear and ominous change. Now, without venturing on too thin ice, is it not in accordance with experience, whether gained in the laboratory or by the bedside, that this particular type is less often associated with the wholly hopeless and incurable than any of the other forms? It certainly is so in Dorset, and in further support of this view I would here mention that in the seventies, when agriculture was booming and the ordinary or average population presumably engaged on their native soil, the percentage of mania among the admissions was as high as 65, so that while in a recently published tabular statement agricultural districts are credited with a high proportion of mania among the admissions, it has to be borne in mind that, notwithstanding the changed order of things, when individual centres are closely scrutinised, the proportion remains about stationary. Turning to melancholia, what do we find? An advance from 18 *per cent.* in the fifties to 25 *per cent.* in the nineties, a jump of 7 *per cent.*, and here is one of the striking features in the changes that have occurred. The increase of this type has been much more pronounced during the decades ending 1896 and 1906 than formerly, and while the loss by migration is an important factor, I am inclined to the view that intoxicating physical causes have played a conspicuous rôle if only by rendering the individual hyper-

susceptible to every extraneous influence. But the really important point is the close association between the type of melancholia as met with in Dorset and the absorbing question of heredity. I do not intend to discuss this question at present, as it more fittingly falls under the head of "causation," still I thought it desirable to refer to it, if only to bring into evidence the variation between the two main types of mental disease, mania and melancholia. The dementias are not so easily dealt with, for while there has been no great divergence of opinion respecting senile and secondary dementia, nor have the use of these terms varied in their application during the period, ideas have not only changed, but the whole aspect of things has altered in regard to the early dementias. It has been stated that owing to the lack of brain activity in rural communities senile dementia is thereby more prevalent; but is this the only or real reason why there is such a high proportion of senile cases among the admissions from rural districts? I do not think so. The proportion of this type among the admissions has risen from 5·8 in the fifties to 8·8 at the present time—by no means an alarming increase. But what about the residuum? The quiet healthy life of a Dorset peasant is as conducive to sound-minded longevity as is the bustle of our large cities, and as the result of a patiently conducted inquiry I am inclined to attribute the increase to other causes than the lack of brain activity. I have already stated that owing to the havoc wrought by the tide of migration the humble home no longer harbours those who are able and willing to act the part of the mental nurse. The poor-law authorities in country districts fail to make provision within their walls for the aged mentally sick, and by a process of devolution the Lord Chancellor, through the Lunacy Acts, ordains that his aged children shall be gathered into the fold—into homes which were recently described as "sepulchres of living humanity, or tombs of the intellectually dead"; homes where, through the instrumentality of the enlightened treatment of mental disease, the ordinary span of life's short journey has been considerably lengthened. The aged are interesting, both on account of the lessons we may learn from them, as well as the reverence with which we in all humility should address them; but when we come to consider the position of the early dement we are met with a totally different condition of things.

The dementia præcox school ridicules the homely terms "primary" or "early dementia," and there are those who adopt "adolescent insanity" in preference to either. I am anxious to make my position clear in this matter, not only because I have experienced some difficulty owing to the accepted views of decades ago, but also because the question of primary or early dementia bristles with the deepest interest in any attempt to study the phases of mental disease as exhibited by the admissions from the district now under consideration. It is possible that in the fifties and sixties this particular type of patient was not so thoroughly sifted from the others as at the present time, still, if time and thought are not at a premium, a few months' careful study of our old case books will lay bare their presence in no inconsiderable number. From the seventies onwards we have been more familiar with this class of case, and I find that in Dorset they have advanced from 1 to 3 *per cent.* among the first admissions during the period under review. This is, if we feel inclined to prophesy, an alarming increase of a most hopeless type of mental disease. Many and various are the opinions held and expressed in explanation, but while the evils of educational pressure, unhealthy environment, a passionate indulgence in various directions extending to abuses and other causes, are important side issues, I have found, as I hope to show, that the increase in this class of patient in Dorset is really grafted on an instability associated with the scourge of heredity, or as Dr. John Macpherson has put it, "a predisposing cerebral weakness and a physical intoxication." This type has been of absorbing interest to me for many years, and I am in sympathy with the writer who reminds us of the danger of general statistics, and warns us that of all classes of argument, statistical arguments are the most open to misuse. Could there be a better illustration of the truth of this than the published statement that the proportion (*per cent.*) of primary dementia among the admissions in Dorset is somewhere about '5 *per cent.*, whereas the true proportion is, as I have said, 3 *per cent.*?

We have now to look into our glass at two types of a wholly degenerative nature, *viz.*, general paralysis and epilepsy, associated with insanity. In the case of general paralysis there has been an increase of 2 *per cent.*, but as this is not one of the common types of diseases in rural districts

less interest attaches to it there than in other districts. One curious fact has come to light in respect to the proportion of female general paralytics, which falls but little short of the proportion in other centres, whereas in the case of males it is only about one-half. If Dr. Mott could be induced to devote a few months to the study of general paralysis as met with in districts like Dorset, I am inclined to think his impregnable fortress of "no syphilis, no general paralysis" would shake still more, and I am assured on good authority that the walls of his masterly-built edifice begin to show fissures. The position of acquired epilepsy shows a slight advance, about 1 *per cent.*, which is entirely among the men, for there is actually a falling off in the proportion of female epileptics, but when we come to consider cases of epilepsy, associated with congenital defect, there is need for us to pause and think. It would serve no useful purpose to make a separate group, and I have therefore considered the whole class of congenitals under one head. The proportion *per cent.* of this class among the admissions has risen from 4.7 to 8 *per cent.* during the fifty years—truly an appalling state of things; and herein lies one of the problems which has to be solved in any attempt to grapple with the question of race degeneracy. I fancy I can hear whisperings as to basing opinions on false premises, such as statistics, accumulation, etc., but let me hasten to assure you that I have been into the highways and byeways, the actual homes and the village schools, for the facts on which I venture to express an opinion. There is no denying, no getting away from the fact of the alarming increase of congenitals among the annual admissions, and for an explanation we have not far to seek. It is ready at hand, the deplorable state of things, easily recognised and probed to the bottom in the social life of depopulated villages and districts. Unwise marriages, no variation, an unhealthy, nay more, unholy attachment to the native, has landed us on the very brink of ruin and degeneracy. Having briefly looked into the question of any variation or change in the type of mental disease, we may summarise the matter thus: Melancholia, early dementia and congenital defect, especially the last, have increased beyond comparison with any increase in the admissions; and the gravamen of these changes lies deeply buried in the social life of the people. Help, or relief, must come from the root; it is hope-



less to attempt repairing the roof with new tiles while the walls are so shaky and the decaying foundations are so rotten.

*Occupations and Insanity.*

I think it was the late Sir George Johnson who once said : " There is reason for the belief that the more thorough and profound is the investigation of any disease or class of diseases the more numerous and intimate will be found to be the relationship with other morbid states." Of no disease more true than of mental disease, and with those words clearly reflected in our mirror let us look at the question of occupation in relation to the changes which have occurred in certain types of insanity. It has been thought that a consideration of "how far the cause of an attack of insanity is related to the occupation of the patient might be a subject worthy of careful research." It was, perhaps, with this object in view that I approached the subject, and not without hope of some little reward, but I fear the results have hardly justified my earlier conceptions. Where the admissions are in numbers within the grasp of easy and accurate classification, as in the case of Dorset, we are not likely to have hurled at our heads the stock phrases, "inaccuracy," "borrowed information," etc., and I venture to say the facts as here given are accurate and beyond dispute. Now what have we found? During the fifty years the class from which the bulk of the cases are drawn, *viz.*, labourers of all kinds, but mainly agricultural, has decreased by some 5 *per cent.* calculated on the annual admissions. Will this occasion surprise? No, for we are already familiar with the fact that the more intelligent labourer has gone elsewhere. Therefore at this point there is no apparent relationship between any increase among the males and the main division under the head of occupations. The division of professions, artisans, etc., never a high percentage, has also decreased, and while it would be sheer waste of time and energy to sum up scattered occupation fragments, I may at once come to the point and ask, if the main groups have decreased, in what group or division has the increase occurred? In that familiar group, "no occupation," which has advanced from 6 to 12 *per cent.*,

I think I ought to build a little wall of defence and beg of you not to imagine that I have included in this division cases where no information was forthcoming as to the occupation or how they gained a livelihood, for all such doubtful factors have been excluded, and the group contains only those who for a multitude of reasons never had and never could have any occupation. I desire to treat this curious and interesting fact as a matter of the greatest importance, and therefore let us for a few moments look at the position of occupation in relation to the female admissions. As might be guessed from previous observations, the wives of labourers and artisans have decreased though there has been an increase of 7 *per cent.* among the class of servants and other unmarried workers, but the main increase has been, as in the case of the males, under the head of "no occupation," the proportion rising from 11 to 34 *per cent.* It will be observed that the increase is much more than in the case of the opposite sex, and reveals to us the high proportion of that most hopeless class, the "mental defectives." Now while a study of occupations in relation to insanity may have shown a striking increase in the group "no occupation," it has not, as was foreshadowed, established any clear connection between certain occupations and special types of insanity, yet I hope to show that the inquiry has not been altogether fruitless. Though I cannot, as has been suggested, trace any clear connection between lack of brain activity and senile dementia, which after all is but the result of natural physiological changes, and strictly speaking should not be classed among the insanities, there is an interesting state of things in connection with occupation and melancholia. The lack of interest and want of any direct stimulus to activity or change of thought in large numbers of the peasant homes in Dorset, mainly through the forces following in the wake of migration, have resulted in a state of gloom and despondency likely to be followed by one of the many phases of melancholia, especially in the case of the predisposed and badly nourished. In so far as the occupation of manual labour is concerned the relationship results from enforced displacement and not because the labourer is not worthy of his hire. A further illustration is to be found in the case of the unmarried woman, who formerly had ample employment in home laundry and dairy work. Most of this is now carried

on by steam laundries and butter factories, and the simple peasant is driven to eke out an existence in a multitude of ways not always conducive to either mental or physical health. In centres where the multitudes collect I can easily understand a different state of things, and that results of a more definite character may be arrived at, but where you have such disorganisation of normal or ordinary life and occupation, as has happened in Dorset, the chances are against any pronounced relationship between occupation and insanity. Admitting that the Dorset labourer lacks in initiative and responsiveness, I do not think the increase of insanity, in so far as this may be proved or accepted, has any direct connection with the ordinary avocations, and therefore I have a difficulty in making any definite pronouncement on a subject which has not the value I was inclined to attach to it. However, the consciousness of greater difficulties ought to recall to our minds this fact, that if the field of inquiry be narrow it can be dug deeply, and in psychological medicine as in other departments, if only a very narrow shaft be carried deep enough we may reach the richest stores of wealth and find use for all the appliances of scientific thought.

### *Causation.*

"Now in every search for truth we can not only exercise curiosity and have the delight, the really elemental happiness, of watching the unveiling of a mystery, but on the way to truth, if we look well around us, we shall see that we are passing among wonders more than the eye or mind can fully comprehend." In this frame of mind, and remembering the words, "He shall be as a god to me who can rightly divide and define," I have to ask you to look with me for a few moments into the question, which of all others is of greatest and deepest interest to the student who, however imperfectly, attempts to trace an association between insanity and any of the numerous influences and factors at work. Dr. John Macpherson says: "Insanity not being one disease, but a heterogeneous group of many diseases, we cannot speak correctly of its cause, and, further, as our knowledge of the fundamental facts of insanity is as yet only fragmentary, our opinions regarding its causation are still necessarily crude and imperfect." If we accept this position it is clearly necessary, if we have a desire to get anywhere near

the truth, to take nothing for granted unless we can satisfy ourselves that truth is on our side, and that our conclusions are not based on figures alone. If it has been necessary to devote so much time and thought to the preparation of corrected birth-rates, how much more necessary must it be in the case of the question now before us, and into which I venture to think more errors are likely to creep than into any branch in the whole domain of psychological medicine. I would here clear the ground by one observation. Do not imagine that I propose taking you through any tabulated list of causes. We are asked to believe that one of the great factors in the production of insanity is associated with the distiller's and brewer's productions, and I think it was Dr. Hyslop who last year warned the public against the evils likely to accrue from the disturbed slumbers of London's rising generation by the nocturnal concerts of love-sick tom-cats, and, again, Sir James Crichton Browne has called attention to the dangers likely to follow in the wake of the motor-car. Now all these influences may, and no doubt do, play a part, but in the case of Dorset the real factors at work are of a different nature, and I feel sure no one would more readily admit than Sir James that good might come from the increasing prevalence of motor-cars in a district where the stagnation of ideas may have become rife and life's dull journey not too exciting. The condition of things in a district where migration has played a conspicuous *rôle* must be wholly different to what is met with in centres or districts where the opposite state of things exists. I cannot accept a grouping of causes from different districts void of common ties, as anywhere near the truth. It may be our habit to speak of the causes in one district as the equivalent of those in another, but is this always right? Acting in unison they might be allied forces, carrying into effect a common condition, but acting apart from each other they might be like foes upon common ground. In considering the factors which have been at work I have not been content with ordinary methods of inquiry, but have looked for facts of corroboration, explanation, or otherwise, as are only to be observed in the cottage, village school, harvest-field, etc.

If I take, first and foremost, intemperance, I do not wish you to infer that I am thinking of alcohol only, as I think it is generally recognised that intemperance in other ways may prove deleterious to the nervous system, and I would suggest



that the total abstinence school should considerably enlarge its list, so as to include such baneful decoctions as black tea and the pocket phial. As regards the question of alcohol, I, in all sincerity, accept the position that, when abused or even in many cases used in moderation, the poisonous effects on the nervous system and the future of the race are fraught with the gravest consequences ; but if you ask me to accept the view that alcohol is the great cause, or even one of the greatest causes, of insanity, then we must part company, for facts and experience have taught me a different lesson. For many years I have asserted, and I do so again, that drink, or intemperance in alcohol, cannot be proved to account for more than 3 to 5 *per cent.* of all cases of insanity in the county of Dorset. I admit there are no large towns, yet there are seaport towns where it is generally supposed the sin or curse of drink is prevalent, and I think those who know the Wessex country will admit that the Dorset peasant is as fond of his glass of cider or ale as is the Lancashire miner or the Shoreditch docker. I am not aware of any authenticated opinion or explanation of what must strike the reader as somewhat curious, *viz.*, that while the position occupied by the county of Dorset as regards the ratio of insanity to the population is one of the highest, it is also the fact that it is one of the lowest in regard to alcohol as a factor in the production of insanity. Reasons may be assigned, such as the greater purity of cider and beer compared with the raw, adulterated and poisonous spirits so largely consumed in cities ; or, again, the lethargic and stolid character of the Dorset labourer as compared to the more highly strung urban workman ; or, again, errors or differences in methods and ways of collecting and arranging facts, and it is notorious how wholly unreliable is the information as supplied by the statement of particulars ; but these and many other reasons which might be mentioned are quite inadequate to explain away the difference between a 5 *per cent.* in Dorset and a 30 *per cent.* in Northumberland. As Lamb observes, "it leads the reader to frame further questions on his own account to which no reply is forthcoming." I am tempted, but converging forces restrain me, to step on soil which great and experienced minds have hesitated to tread, and yet the question is of absorbing interest. I am conscious of the readiness with which the lay press and others pick up and shape to their own liking every expression or statement on the subject

from members of the profession, still I say frankly that the prevalent notion that alcohol fills our asylums, that drink is the greatest cause of insanity, or that the medical profession has denounced alcohol as wholly unnecessary, has not been proved, and, as regards Dorset, we must tap another source to account for the high ratio of insanity. Has not the Chancellor of the Exchequer solemnly prayed for further assistance from his declining excise duties, while the ratepayer grows sleepless under the increasing burden of insanity? Was there ever such a commentary on the intemperate statements, it may be, of well-intentioned but misguided persons. All sound-thinking people are alive to the evils of intemperance, whether in drink or other directions, and it is well known that the mentally defective, the epileptic, and the highly neurotic are more easily affected than the mentally sound. Again, the number of alcoholics are far more among re-admissions than first admissions, which fact alone shows with what care we should approach the subject, lest we fall into the error of tabulating as a cause what was clearly a symptom of loss of control. I would therefore ask for a stricter observance of the real facts and a truer regard for utility and charity when considering the personal equation, which enters so largely into every inquiry.

It might be thought I had run away from the question of intemperance in other beverages, but this is not so, and while I had not originally intended bringing up the subject of food at this particular point, I think it will be better to do so and thus save repetition as well as maintain a gradual ascent to the one great factor. At a time when so much attention is being given to the better housing of the poor, which means a gradual improvement in the environment, the question of how, if at all, the high ratio of insanity may be associated with the ordinary diet of the Dorset peasant cannot be left out of consideration. Now let us first look at the difficulties so frequently experienced by the cottage community as regards that most necessary article of diet, milk, which, as Professor Osler reminds us, was the original food of man. There would seem to be an inherent notion that poor people in the country can always obtain milk. It is a fallacy. The ordinary cottage family in the country has great difficulty in obtaining even a partial supply of milk, and when extra is required it is not to be had. This is not due to poverty, but to the iniquitous system of tied dairies, small as well as large.

Further, the supply is not only short, but the quality of the poorest, and "the mere citation of this fact proves the primary urgency of the milk supply and the binding obligation of protecting its purity." The evils do not stop here, for since milk is short, something else must take its place, and everyone knows what is meant by the black tea-pot, which is always to be found on the hearth-stone. The father, mother, son, daughter, and even the suckled infant, all share alike from the ordinary fare of black tea, bread and cheese, morning, noon, and night. This is no coloured picture, it is the simple truth. If the beverage tea were properly prepared, and not indulged in too freely, no harm would be likely to accrue; but what will be said of the ordinary labourer who consumes daily two to three quarts of black tea thus prepared. A brew is made between 5 and 6 a.m., and this same pot continues in use by being added to from time to time during the working day, until at last it is little else than rank poison. The fact that this tea is without either sugar or milk, being what is familiarly known in Dorset as "stark naked," makes things worse, and I am convinced is in many cases the cause of insanity among the labouring class. I am not decrying tea in its proper place, but the evils of tea-drinking among the working classes have to be reckoned with in any attempt to probe deeply the causes of insanity. As a nation we consume six times as much tea per head as any other European country. This innutritious diet must lead to impaired nutrition of the nervous system, and as has been pointed out by the Irish Board of Lunacy, "when acting over many generations may have developed those neuropathic and psychopathic tendencies which are the precursors of insanity." Facts of this nature may lend colour for the demand for free breakfasts to certain classes of school-children, and whoever has visited the typical village or town school could not have failed to observe the number of dull, stunted and neurotic children. In the course of my inquiries I found as many as 15 *per cent.* of non-educable children in village schools, and the percentage of dull and backward ran as high as 35 *per cent.* Well might the author of *Physical Efficiency* say: "The towns will soon call in vain; for in place of being robust and healthy, the children of the rural districts will often be found to be stunted and in a worse plight than the city children." With these evidences of brain

poverty and physical defects looming large before us we might be tempted to agree with the learned professor when he advises us to throw beer, spirits, tobacco, tea, and coffee into the Atlantic as unnecessary and that the race would be the better for it. Whether this advice will ultimately prove to be a panacea time alone will show, but it would certainly solve many of the problems with which philanthropists, physicians, and politicians have to deal.

### *Heredity.*

In the *Sixtieth Report of the English Lunacy Commission*, issued last July, which is one of the most interesting and valuable reports ever issued from that office, the county of Dorset is credited with the highest percentage of heredity as a factor in the production of insanity. The information therein given does not reveal the whole truth, and, as in the case of the birth-rate, so with the ratio of heredity, it has to be corrected. I do not intend to wade through the mazes of the latest theories on the subject as propounded by Beard, Ford Robertson, Archdall Reid, and others, but, in the words of Dr. Clouston, will content myself by accepting the theory that ill-nourished and degenerative parents are likely to produce between them bad progeny, and even if not ill-nourished a strong hereditary predisposition will far out-weigh the influence of good environment. The author of *Clinical Studies of Psychiatry* says: "Whatever the exciting causes of insanity may be, the chief predisposing factor is hereditary predisposition," and Dr. Mott, as the result of a vast experience, states, "that the large majority of the insane are hereditarily predisposed." In discussing a question of this magnitude it is as necessary to avoid being too narrow as it is desirable to guard against collateral errors, and as "the inheritance of both mental and physical characters hardly admits to-day of dispute, it is only the manner or intensity of inheritance which calls for discussion." I have carefully looked into this question as regards the insane and mentally defective in the county of Dorset during the fifty years under review, and the position of heredity as being the main predisposing cause is proved beyond dispute. While the percentage of heredity among first admissions may have varied during the five decades, there has been a progressive advance



in the numbers admitted among whom a definite history of inheritance could be traced, until at the present time it is somewhere between 50 and 60 *per cent.* As stated in an earlier part of this address, I have taken first admissions so as to avoid any risk of false deductions which must inevitably arise if you do not exclude the danger of reckoning the same person more than once. In the course of this inquiry I have been more than ordinarily careful to exclude all possible cross currents, and this is why I elected not to deal with the question of heredity on the total admissions. Considering the present position of heredity as an all-important factor in the production of insanity, it is well, perhaps, in passing to consider the views of those able and distinguished members of our profession who, while admitting the importance of heredity in relation to mental disease, ask for statistical proof of a like inheritance among the sane members of the community. Now a demand of this nature must inevitably be characterised as of an inquisitorial character, and as I think we all know how difficult it is to obtain even a modicum of the truth in regard to recognised cases of mental disease, how much more difficult, then, if not well-nigh impossible, must it be to obtain information about those who, though presumably sane, may be predisposed. Far be it from me to even appear to throw dust on the brilliant horizons of those who aim at such a goal, but it does not appear clear how any inquiry would affect the case of heredity in relation to insanity, for since heredity is equally established in other allied neuroses such as epilepsy, alcohol, chorea, phthisis, it would be necessary, in order to arrive at the truth, to trace each variation to its ultimate end, and while I commend the subject to race enthusiasts, I feel that it is quite outside the scope of this address. It has been pointed out that you cannot stop at a predisposition to one neurosis, for it is quite possible that the variation may be as true an inheritance as the original neurosis, so that the subject is one of many parts and great difficulties. For our present purpose it is sufficient to deal with heredity as related to insanity and mental defect, and since a predisposition has been traced in over 50 *per cent.* of first admissions, it may with some plea of justification be asked, is there any possibility or even probability of accounting for or explaining this high percentage of heredity among the insane in Dorset? At this point I am haunted by the words of the late Sir William Bowman,

who said : " Never till the present moment have I had so much cause to lament my many deficiencies, since now they must of necessity affect others more than myself." It is an easy task to build an edifice in the matter of theories, but the cement has to be of the best, and therefore the more special is any department of medicine the greater is the need to recur often to general principles, and to bear in mind that so close is the solidarity of the animal organism that there is a literal and physiological truth in the apostolic statement, " If one member suffer, all the members suffer with it." It would be idle to attempt to throw any doubt on the importance or position of heredity as a predisposing factor in every phase of mental defect and mental disease in the county of Dorset. The field simply bristles with evidence and proofs which even the most ardent advocate among the opposition will find it hard to explain away. Admitting that the scientific and reasoning mind can best sift the problems of heredity to the bottom, the general question of predisposition is so closely allied with the social and racial atmosphere that one has to start from humble ground in the hope of building up a passable conception of human stability, for, as Burke once said, " I am aware that the age is not what we all wish, but I am sure that the only means to check its degeneracy is heartily to concur in whatever is best in our times." My one desire in this inquiry is to seek out the truth, and since experience has taught us that this can only be accomplished by a true regard for the correlation of facts, I will not attempt idealistic colourings, or ambiguous phraseology, but humbly endeavour to delineate an unbroken sequence of events.

To begin with, there has been throughout the fifty years a steady decline in the birth-rate, and while I shrink from entering the raging field of newspaper warfare, I must take exception to the statement that there has been a greater fall in the urban birth-rate than in the rural. In Dorset the corrected birth-rate shows the alarming decline of 30 *per cent.* during the period of fifty years. The seriousness of this fact grows in volume and importance as we link it with the question of migration, for while the one may be the accredited result of studied temperance, the other is the dire consequence of the social upheaval in rural districts. The process of depopulation, which has resulted in such a serious loss of persons to the county during the five decades, whose places have not been

filled by a fresh population, simply means that the weak, the insane, and the diseased were left behind—not a happy or robust combination to continue the propagation of the species. The unexplained attachment of the sexes among certain groups of allied neuroses, such as insanity, phthisis, epilepsy, etc., may be examples of natural selection, but not with a view to the survival of the fittest, and reminds us of Dr. Clouston's pregnant phrase: "To observe the way marriages are sometimes arranged is almost to lose hope for the future of our race." In the county of Dorset there are parishes which for obvious reasons must remain unnamed, where the conservative principles of matrimonial unions were so notorious that the choice of a partner in wedlock was by local laws ordained, and whoever dared to transgress might prepare to pack his goods and chattels as one of the excommunicated. This was not a custom of a day nor a year, but extending over generations, the result of which has been an almost unparalleled condition of things as regards the evils of unwise marriages. If we are to accept Mr. Heron's proposition that 25 *per cent.* of the married population produces 50 *per cent.* of the next generation, and that the thrifty, the cultured and well-to-do, fail to produce their due proportion, how appalling must be the outlook when the weak and the feeble inter-marry and when the introduction of fresh blood, which is most likely to check the neurosis, is as a red rag to a bull. "I should be loath to say that everyone whose mind has once been temporarily unhinged by grief, anxiety, or physical pain is therefore doomed to celibacy, that man or maid whose father or mother's mental health once broke down, should never marry. But at least the risks should be better known than they are at present, and some restrictions might be put on the marriage of those whose record of mental health is so bad as to promise a heritage of insanity to their children." To these facts, in the face of which it is useless to attempt to speculate, there has to be added the far-reaching effects of an innutritious diet, the consequences of which may ultimately prove to be of even greater importance for the future of the race than all the coloured pictures of the evils of bad environment.

It is commonplace that "truth is stranger than fiction," and it is equally true that neither science nor the legislature will materially affect the question of insanity before the lay public

have awoke to the fact that there is still reason to believe in the wisdom of the old adage, "prevention is better than cure." It is no part of my task to enter the field of controversy in relation to the present and future treatment of mental disease, which has been flamed into prominence by the anonymous expositions of those who guilelessly pretend to have an apostolic benediction for the purity of their statements, but I may be excused for briefly referring to some of the views and ideas which have recently been put before the public. It would appear as if a good cause were in danger of suffering, not from want of kind intentions, but from a plethora of conflicting ideas. Now as in the case of the causation of mental disease, so in the case of the means to be provided for its treatment districts differ, must differ, and will differ solely and simply because the numbers which have to be dealt with vary to such an extent. In the case of Dorset I am afraid that Drs. Carswell and Toogood would not have much opportunity of carrying out their methods, where, as all know, there is but a scattered population and only the ordinary workhouse to deal with. In large centres such as London, Liverpool and Glasgow, where a high proportion of temporary cases are met with, the conditions are wholly different to those in country districts. It has to be stated, and with satisfaction, that in several of the large centres the Poor-Law infirmaries have done excellent work. To take but one example. Dr. Toogood says there passed through his hands in 1905, 7,322 cases of supposed insanity, and he tells us that of this number he discharged 2,877 as cured, and sent 3,583 to the asylums. Now, what I would like to know is this. How many of the 2,877 discharged as cured were certifiable, and what proportion of the total number sent to the infirmary should really have been classed as of unsound mind? Until we know this we are not in a position to make comparisons or draw conclusions, and the stigma of being sent to the workhouse is as much to be resented as that of the certification bogey.

For some considerable time there has been much talk as well as voluminous writing on what is familiarly known as incipient insanity, by which, I presume, is meant the early symptoms of mental perversion. Now, somehow or other many of the expressions which have appeared in print would lead the unwary and ignorant to believe that at the present time there



is some law or hindrance to the treatment of early symptoms. Is this so? I am not aware of any hindrance to the ordinary medical attendant treating these early symptoms, and I think it is generally known that many do so most successfully, and with even better results than are often met with in the privacy (its only advantage) of single care. In connection with this question the suggestion or proposal as at present put before us would only benefit those who are in a position to pay for the consultant and single-care home, so that the vast majority of the incipient class would derive no benefit. Will anyone say that legislation of this kind can or could be considered satisfactory. The poor servant girl or the mechanic's wife should have equal opportunities of receiving benefit with the millionaire's daughter. I think it is much and greatly to be regretted that members of our profession should continue to harp upon the stigma of certification, which, after all, is sentimental, and I would venture to throw out a word of warning lest the proposed notification may not soon be surrounded by similar sentimental objections. The clause in the Scotch Act requires no notification, and because such a clause exists across the border, where it is only taken advantage of by the few and seldom by the general practitioner, do not let us persuade ourselves into believing that its adoption in this country would either reduce the ratio of insane to the population or raise the recovery rate. It is time to have done with all this cant about the stigma of certification and to ask for the removal of what produces the stigma. We are constantly being told that it is not the question of the disease that is the stigma, but the means whereby the disease is enabled to be treated where it ought to be treated, in the homes and institutions provided for the purpose. This view of the position of things reveals a veiled truth which is ruthlessly exposed by Professor Clifford Allbutt's solemn words: "The stigma, if such there be—I rather resent the phrase—lies in the misfortune itself, and not in the red tape of the proceedings."

There is a further proposal which, perhaps after all, is the most interesting, as leading us rather nearer to the solution of the difficulty. With regret it has to be admitted that the inauguration of out-patient departments in connection with the asylums of this country has proved a failure, and the question here raised is this: What can be done to enable the poor of

this country to obtain advice and guidance from the medical profession in the early stages of mental disease? It has been suggested that public hospitals should open their doors and establish mental departments. This is no new proposal. The good work done at St. Thomas's for many years by Dr. Rayner and his successor Dr. Percy Smith, and at Charing Cross by Dr. Mercier, must be known to all, and this very year we have the splendid example of the Western Infirmary, Glasgow, where a new mental department has been inaugurated and placed under the guidance of Dr. Oswald. I venture to think that if this were done all over the country no member of this Association nor any member of the medical profession would raise a dissentient note, but since the public hospitals of this country are supported by voluntary contributions, is this proposal feasible, and are not the difficulties insuperable? Here again a simple question of numbers. What is practicable in large cities ends in dreamland in country districts. There is one suggestion I would make, *viz.*, that if city, county, and cottage hospitals were to open their doors, and if it were proved that thereby a number of cases were helped and treated to recovery, county and other central authorities should have the power to contribute a like amount to the hospitals for the cases treated there, as they do to the existing institutions.

The question of receiving houses for the care and reception of cases previous to certification is being taken up in various parts of the country. In large centres and populous districts the proposal should prove a valuable one, but I fear the same cannot be said of sparsely populated country districts. Again, would these receiving houses be any improvement on the Poor-Law infirmaries and would they not be surrounded with the same atmosphere of suspicion, and although it is proposed that there shall be no certification would there not be the same sentimental stigma as attaches to the house or institution for the treatment of mental disease? Surely it would be a simpler, more effective and better way to meet all these difficulties by asking the legislature to free the institutions of this country from oppressive laws and the stigma of lunacy, and to allow them to open their doors to all, incipient or certified, as in the case of ordinary hospitals, and then there would be an equality of treatment, then there would be a chance of the early sym-

ptoms of mental disease being treated by those who, from experience, are most competent to do so, and who have the ways and means at their disposal. There are two phrases which from time immemorial have been looked upon with suspicion and disfavour. The phrases are "administrative duties" and "certification." I have already touched on the latter, and who among us will not admit that administrative duties are often our only recreation, a safety valve, an outlet from the maze of psychological cobwebs, a hobby if you like it commensurate with the golf ball and the fisherman's tackle. No, where "there's a will there's a way" and it is nothing less than a species of idle criticism to talk about asylum medical officers having no time for scientific research because of their administrative duties. Those who have done the great and good work in the specialty have not been those who have leisure but the busy, the willing, and the determined. One does not care to be accused of hypersensitiveness, but I feel bound to say that the sweeping references to asylum medical officers from the pen of an anonymous correspondent of the *Times* are as unworthy as unjust, and of this writer I might say what Shiel said of O'Connell: "He flung a brood of sturdy ideas on the world without a rag to cover them." By all means let the great metropolis of London institute and endow an experimental school of research for the study and treatment of mental diseases. All will welcome such a school, but its establishment will be no answer to the crying question of the day since it could but cover a limited field, and all will agree with Professor Clifford Allbutt when he asks that any such school of research should be officered by trained men and not by the visiting physician, who, though we all admire him and recognise him in his own department as a distinguished specialist, does not pretend to have any special acquaintance with the causes, symptoms and treatment of mental disease. What did the late Sir James Paget once say? "In truth the fault of specialism is not in narrowness but in the shallowness and the belief in self-sufficiency with which it is apt to be associated." I think it will be admitted that there is no scarcity of up-to-date or modern institutions, both public and private, for the treatment of mental disease, and is it to be supposed that the ratepayers of any county or city would quietly agree to the establishment of other institutions which would seem to be wholly unnecessary

and presumably for no better reason than to witness the reincarnation of visiting physicians? It is possible that "by the teaching of a higher and better system of life" beneficial changes may be carried into effect, and that the time may come when different views will prevail, and when parliament will consider it one of its first and most binding duties to encourage the diffusion of knowledge of the conditions upon which the health of the nation ultimately depends. I would here recall to your minds the words of a great Russian physician who on a memorable occasion said: "If living individuals may not be praised institutions may"; and I think of the British institutions for the insane it may truly be said that they are worthy of the great country which has given them birth and the great people by which they are governed and supported, and of the great profession which has brought them to their present admirable state of development. I would emphasise the fact that the improvement of the natural gifts of future generations of the human race is largely though indirectly under our control. We may not be able to originate but we can guide. The processes of evolution are in constant and spontaneous activity, some pushing towards the bad, some towards the good. Whatever may be the outcome of the future it is clear that some sort of state interference is a necessity, for the influence of custom, law and tradition surrounds and presses upon us like a social atmosphere. Let us guard against any association with those vampires whose only business with the medical art is to drain its life blood for their own particular use and advantage; and whose complacent ignorance of the bearings of medical science fails to recognise the processes of disease to be one and the same in kind, whether they issue in the spoiling of a function or an organ. If through circumstances in the nature of the work itself the care and treatment of the insane may have assumed the character of a specialism, let us fight strenuously against any tendency towards the divorce of medical science and medical art from every act and every thought throughout the hours of our life's daily work.

I fear I have trespassed too long, and I feel I have treated an interesting subject in a broken and feeble manner. I must trust to your scientific habits of thought to take up the few mere hints which I have thrown out—for I have hardly



been able to do more than this within the time allotted to me—and to judge of their value after your own reflections as to what further may be said either for or against them. May we work onwards and work upwards so that it may not be said of us in the times that are to come that we failed to do our duty. If under the strain of official work and the full blaze of public criticism we can individually add even a colouring of science and art—especially our own science and art—to the many brilliant achievements annually accomplished within our ranks, much as the waters of some noble river gather their colourings from the soils through which they pass, I have no shadow of doubt our labours will be crowned with reward. To this great end we may all do something, but labour as we may our task will never be finished, for not once in a hundred years, as runs the fable of the Arabian bird, but every day and all day long the process goes on, a death of error, a development of truth. "Truth," said Plato, "is the body of God and light is His shadow."

Let our aim be to hold fast and care well for the old truths, in our love for the new science to care well for the old art. "For in autumn the leaves fade and fall first from the youngest branches; they linger longest on the old wood. Let us graft our new truths on the old stock; so will they live longest and flourish most." Thus shall we help on in some measure the great objects for which as a profession we are ultimately striving, and do our part in contributing to the general well-being of the human race.

"Our remedies oft in ourselves do lie  
Which we ascribe to heaven: the fated sky  
Give us free scope, only doth backward pull  
Our slow designs when we ourselves are dull."

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*Psychiatry as a Part of Public Medicine.* A Discussion  
opened by T. S. CLOUSTON, M.D.

Dr. CLOUSTON: Mr. Chairman and Gentlemen,—We all know that preventive medicine—public medicine—is now that branch of our profession which is in the ascendant, and which is most looked to for the future. In short, medicine is called

on not only to aid the individual, but also to help the community in regard to every matter concerning its health, its happiness, and its longevity so far as these depend on bodily conditions. Science can do a great deal for human life, and naturally the community asks science to do so. The gist of what I am about to say is this: Does our department in medicine—call it psychiatry for short—do for the community in an organised way what it might? And if it does not, has not the time arrived at which psychiatry should claim to become a part of public medicine? Should not it take its place with chemistry, with biology, the study of infectious diseases of all sorts, the study of air and water, and all those things which conduce to human life and health? Is it not time, sir, that the department of medicine which studies the mind and its disorders particularly should step in and say: "We are now prepared to help as a branch of preventive medicine"? You know that each man in his private capacity, and especially those of us who hold public appointments, has, by his annual reports, by means of papers to medical societies, by means of the various efforts of this Association, helped to spread the knowledge of psychiatry, and has thus helped the community. Most of us are already public servants, receiving public money, and therefore with a duty to discharge to the public. It would seem very natural that psychiatry should, in an organised way, claim to be a part of public general preventive medicine. Let any person in this room take half a dozen of the recognised text-books on "Public and Preventive Medicine," and turn up the words "mind," "brain," "mental health," and, indeed, anything which relates to our department, and he may do so without finding a single reference in any of those books to the mental condition of the community as requiring the attention of the public health officer or any other man engaged in connection with preventive medicine. The whole matter is conspicuous by its absence from such works. Is this right, or is it wrong? If it is right, I had better sit down. If it is wrong, then I expect you gentlemen to take part in this discussion, and to express your opinions as to why it is so, and how it can be amended. Our opportunities are very considerable. As public servants we have virtual charge of the mental wrecks of the community, and we have the means, in many cases, of telling why they have become mental wrecks, as you, Mr. President, so vividly endeavoured to do in

regard to the county of Dorset yesterday. There is no doubt that the community in general have not realised what this department of medicine might possibly do to help them. I do not claim, sir, for a moment that our data are as exact and intelligible as the data of chemistry and bacteriology and some other branches of public health are ; but I maintain, without fear of contradiction, that we have relevant facts and data, and that an organised effort might make those facts and data available for the public benefit. In short, I would ask, Can mental medicine, mental hygiene, be made a part of public medicine, so that the authoritative writers of text-books on public medicine shall not utterly neglect this subject for the future? If so, how is this to be done? Like everything else, it will be partly individual and partly by the organisation of individuals. If we have facts, then those facts can be used, and for the effective use of them I take it that an Association of this kind can help enormously. In addition to impressing the writers of text-books could we not also so impress our subject on the minds of the profession and of the public that it might become the duty of the medical officer of health seriously to take into consideration the mental health, the mental condition, the brain risks of the community that he serves, in addition to questions of drainage and water supply, and infectious diseases and adulteration of foods, and the housing question? Does this idea, which I feel I am but poorly expressing, seem to you and to other members of the Association to have anything in it of practical usefulness or not? Is the medical officer of health prepared to study the mental effects of environment in our population? Is he prepared to widen his view to such an extent as to look at the social customs of the community that he serves as affecting their mental condition? Is he prepared to look, say, at our drinking customs, at our marriage customs? Is he prepared to take up and consider not only the question of the clothes of the tramp, but also the mental condition of the tramp who is circulating as a bane of the community in our midst? Then, again, the potential criminal, does he not affect the mental life of the community in many places? If so, why should not the medical officer of health take cognisance of these matters as well as the policeman and the lawyer? And will the ideal medical officer, trained in medical psychology, will he, after ascertaining his facts, marshal them, and be the

means of directing the attention of the community to them, so that they may realise them, and may look to the medical officer of health, associated, perhaps, with the county asylum doctor, for certain preventive measures? Is that a counsel of perfection, or is it not? That is one of my questions. Then if the medical officer of health takes it up, naturally and necessarily the Local Government Board would have to extend the sphere of its supervision and of its inquiries, it would have to go beyond matters of drainage and smallpox, into matters mental. Are we not a sufficiently organic part of medicine to claim that this should be so in the not distant future? We all know that our annual reports give some of us a good deal of trouble in the getting of them up. I have always professed to my medical brethren and to the public that it was part of my duty, as the doctor of an institution in my district, to educate my masters, and to educate them in the mind specialty. I have never hesitated to speak of these matters, and I am always pleased when my annual reports have been published and commented on in the local newspapers. If we come to take up this public health idea our reports will undoubtedly need to be somewhat enlarged and widened in their scope; and we shall have to bear in our minds this definite idea of the medical officer of health and the Local Government Board, in addition to our own committees and the Commissioners in Lunacy, as our audience to whom we speak, and whom we intend to benefit. We all know how valuable the reports of the Commissioners in Lunacy are for all three divisions of the Kingdom. To fit into the new scheme they also would require to undergo a certain change in character—a widening in scope, and a more conscious effort to benefit the community in regard to its mental health. A blue-book may be made, as we know some of them have been, of intense interest and of great importance to the community, and I am quite sure that the Commissioners in all three divisions of the Kingdom would, if there is anything in this idea, consciously endeavour so to frame their reports as to fit into the general scheme. It is no secret in Scotland that though we have a Local Government Board and we have a Lunacy Board—each very effective, each doing its very best for the community—no inter-communication had taken place between those two public bodies, established for the public benefit up to two or three years ago. It was only when Dr. Carswell's wards were got



up by the Glasgow Parish Council that there was any organised arrangement between the Scotch Local Government Board and the Scotch Lunacy Board for the benefit of the community, Surely this was a scientific departure. If this idea is ever carried out there will have to be a basis of co-operation for public health purposes between the asylum doctor and the medical officer of health, the Commissioners in Lunacy, and the Local Government Board, as well as with the general medical practitioner. General ideas, general principles, as we know, do not commend themselves to everybody. But every great reform must be founded on some general principle; and it does not seem to me that this general principle that I have laid down is an unattainable ideal to be looked forward to in the future.

Can we increase the psychiatric modes of looking at things in relation to the universal medical inspection of schools, which is coming in the near future—and I may say it was this which originally put this idea in my mind when our secretary did me the honour of asking me to open this discussion? Here we are to have a new Education Bill, the chief provision of which, from our medical point of view, will be an universal, thorough, and effective medical inspection of schools. Is it to be a really efficient inspection? Is it to take into account the whole of the powers and faculties of the children, or is it only to refer to their eyes, and their ears, and their clothing, their height, and the gross physical characteristics of each child? Can any man with any physiological or psychological knowledge, thinking about this subject, doubt that the future inspector of schools should be a man capable of a psychiatric mode of looking at things, able to carry out his work on those full and broad lines? I say, sir, that this is extremely important, and probably some member of this Association who is better at this kind of thing than I am will think of some effective method of bringing in our influence, so that when this question comes to be discussed in Parliament and the rules have to be laid down by the Education Department, a mental examination shall be carried out, as well as a physical examination. It is marvellous how little effect those extensive investigations made by Dr. Warner have as yet had on the lives of the school community. His exact observations and records seem to have “been writ in water” so far as the community is

concerned. I think this Association could, in the work which Dr. Warner has initiated, have concrete facts with which to approach the Education Board and the medical profession. That, I think, is far and away the most important part of this discussion for our consideration to-day. Let us cut in now and impress ourselves on the new medical inspector of schools. He is quite certain to come. He is at the door, and he will be inside the room shortly. Let us have him properly educated before he comes in. The schoolmaster, of course, will have to be educated to a certain extent, and that would follow naturally through the new medical school inspector. There is such a thing as the relation of psychiatry to the law-breaker, and that has been already a good deal in the air. Dr. Mercier can speak more effectively on that subject than I can. But there is no doubt whatever that we ought to be able to use in a far more definite and more organised and satisfactory way the knowledge of our department for carrying out the law than hitherto has been done. We know it could be done in various ways, *e.g.*, as assessors to judges, or as experts selected whom the judges must consult in certain cases, or in other ways. At the same time this would be part of public medicine, which included psychiatry, if the question were looked at from a philosophical and really scientific point of view. We would thereby greatly benefit the community with our special knowledge, looking at it from that point of view alone. And by way of raising certain points I put down certain questions. At all events they will probably help to excite discussion. Firstly, the occurrence of hot-beds of insanitation, dirt, neglect of the decencies of life, and of immorality in families, and the coteries of people in large cities who are manifestly degenerate in mind—so degenerate that those practices are quite natural to them, just as the practice of eating his fellow man is natural to the cannibal. If they have been submerged through real mental deficiency caused by environment, cannot the medical officer of health lay hold on them and do something for them from that point of view, not from the moral, not from the law point of view, but from the psychiatric, preventive point of view?

Then, secondly, what are the effects of our present school education and its methods on certain children? To take strong cases, let us say the children of the insane. Insane people, and those predisposed to insanity, procreate lots of

children. Neurotic people procreate them in large numbers, and these children have to go to school. It is easy to find a mentally deficient girl with many illegitimate children. Habitual criminals have children, and many of them are bright, excitable, imitative, very educable, but do they not need special modes of education, special environment, special treatment because they are the children of the insane, the neurotic and the criminal? This at present is not thought of by the schoolmaster or, practically, by anybody else, except those children are manifestly and grossly deficient.

Thirdly, there are kinds of brain and mind in which excessive drinking and the drink craving are symptoms or consequences, rather than causes, of social and mental defect and disease. And then there is the tremendous question—and we are not satisfied nowadays until we ask it—how does insanity arise? what are its prodromata in a community? why should not the medical officer of health hunt down the case of melancholia as he does now the case of smallpox? Is there any valid reason against it? If so, let those who think so speak out as part of this discussion. How can the general public be educated into that most momentous of questions, the making inquiry into the mental health, the nervous health of the families into which they and their sons and daughters propose to marry? I have been very much impressed of late years with the way in which this subject is taking possession of intelligent people, by the number of times one is consulted by young men and young women proposing to marry, or by their fathers or mothers. I used to have the feeling in the back of my mind when I was consulted that it did not matter what I said, it would not make any difference. But it is making a difference; and I and others could tell of scores of marriages which were put off in consequence of psychiatric medical advice.

The PRESIDENT said the Association had had what it expected to have, something clear and concise, something worth listening to. He hoped many of those present would discuss the subject, because he felt, with Dr. Clouston, that prevention was the crying question of the day.

Dr. HURD said he thought that all present would be persuaded that the course recommended by Dr. Clouston was an extremely desirable one; that they, as medical men and as men interested in mental medicine, should bring their knowledge to the use of

the community, so that they might assist in guiding the community wisely in all matters in which they had special knowledge. Unfortunately, however—at least if things in England were like what they were in America—it was very easy to point out the difficulties, but very difficult to suggest the remedies. Dr. Clouston had referred to the fact of his having been asked to give advice in reference to the marriage of people who were unfit. He remembered scores of instances in which he had been consulted as to the advisability of marriage between neurotic persons, but he did not recollect a single case where his advice was taken. It was given honestly and judiciously, and sometimes at great length, as well as at great personal discomfort to himself, but it was not taken. The same was true of advice which he had given in reference to neurotic children—children who should not be forced at school, whose hours of study should be very carefully considered; and in many instances such advice had been disregarded by the parents—parents who were aware that their children were precocious, and had a nervous organisation. They were rather pleased to have them advanced and stimulated in school, instead of restrained. The advice of the medical man was not always taken in reference to the treatment of the criminal, as to the establishment of special schools for backward children, and for those who required special instruction. The problem before medical men was how to make the knowledge they possessed effective in the community. Dr. Clouston had pointed out one method, and in looking back over a connection with the speciality for many years he thought he could say it was the only means by which he had ever succeeded in attaining any results, namely, through the published reports, and through work which was brought before the public in some general way. He thought it would be necessary for doctors to sow the seed for a long time and wait very patiently for the harvest.

Dr. URQUHART said that Dr. Clouston was always a little ahead of the rest of the specialty, and was spurring them on to fresh adventures in the working of the Association. And if what Dr. Clouston said that day bore no immediate fruit, he might well console himself with the reflection that it was a considerable number of years after he addressed the Association on the question of the training of nurses and attendants



that the Association took it up and made it the success it had proved to be. He had no doubt that what Dr. Clouston now said would bear fruit; and he felt with Dr. Hurd that what should be done in the meantime was to continue sowing the seed, each one in his own sphere of usefulness, and endeavour to do what he could, as the President had done in elucidating problems of insanity relative to the county to which he had devoted so many years of his life. Dr. Urquhart had had occasion lately, for other purposes, to inspect school children in Perth, numbering some 7,000, in the elementary schools, of course from the psychiatric point of view, though he had also to take into consideration their physical imperfections and necessities. To examine those children properly, of course, took a long time, but it was a work of the intensest interest to him. And when the School Board heard of it they demanded a report, which it was of still greater interest to him to produce. The consequence of that was that a medical officer had been appointed for the examination of the children in the Perth schools, on the understanding that in regard to the feeble-minded and backward children he was to be consulted in every case. He thought it was by such means, by informing and enlightening reports, by the spread of their opinions and their technical knowledge in the Press, and in scientific societies, that they could come nearer their goal. It must be remembered that this was not a new question for the Association. Some years ago, he believed it was under the auspices of Dr. Yellowlees, the Association summed up the matter in a long series of articles which were largely circulated among the county councils of the country. When an association promulgated its beliefs there was always a difficulty, because what came very tersely from one person had to be so watered down and amended as to become in a great degree ineffective. And he did not know that the Association was in a position to repeat its experiment of informing the public as an Association. He certainly thought that what Dr. Clouston had said that day was an indication of the proper means of approaching the matter. Of course, the various members did not necessarily agree on all points. Nothing could be more repugnant to him than the idea of a medical assessor being appointed to guide a judge in his decision. Such an idea was quite subversive of the very foundation of legal procedure in this country, and he hoped

such a thing would never happen. He had only to say, in conclusion, what a pleasure it had been to him to hear Dr. Clouston as eager to-day to press on the work of the Association as he was so many years ago.

Dr. MERCIER said that he had listened to Dr. Clouston's address—as he listened to everything which came from him—with the most eager attention; and he waited for the first definite and concrete and practical proposal which should be made; but he did not get it. The author stirred his hearers up to urge upon the public, and upon the medical officer of health, that they should do vague things. He, Dr. Mercier, could not make out what it was the medical officer had to do in order to assist in the diminution of mental disease among the people, except that he was to hunt down a case of melancholia as he would hunt down a case of smallpox. But he would point out that a case of smallpox was hunted down in order that the contacts might be discovered, and so that the case might be isolated from the rest of the community, and thus that the spread of the disease to other people might be prevented. But supposing a case of melancholia was hunted down—and it usually was hunted down sooner or later by the relieving officer—what then? It was isolated always; at all events, it was separated from the rest of the community, not for the purpose of preventing spread, nor could they discover, as a rule, the contact from which that particular case had been infected. So that he failed to see what the practical value of such a proposition was. He did not say there were not things which they could very well recommend to the State—improvements in the general mode of dealing with the feeble-minded. And he thought there were ways in which the general treatment of people could be very much ameliorated; but he did not see how it could be done through the medical officer of health, nor exactly what it had to do with drainage, the water supply, and the other matters to which Dr. Clouston had so eloquently referred. He would indicate one way in which members of the Association might be of service, if they were to urge upon the authorities a greater co-ordination of effort in dealing with defective-minded persons. At present there were at least six central bodies sitting in London all of whom had to deal with feeble-minded persons, or persons with defective brain, and all of whom were isolated from each other. First,

there were the Commissioners in Lunacy, who had to deal with certain classes of the defective in mind. There were the Lord Chancellor's Visitors, who had to do with a portion of the same classes as those dealt with by the Commissioners. There were Masters in Lunacy, and they, again, had to do with the same class. There was the Home Office, which, by means of its Prison Commissioners, dealt with the criminally insane. Then there was the Local Government Board, which dealt with lunatics in workhouses; and there was the Education Office, which dealt with feeble-minded children. All those different offices had authority over some section of the unsound in mind, yet not one of them had any communication with any other office, so that their efforts were unconnected. Thus a person might pass from the workhouse to the streets, from the streets to the gaol; from the gaol to the streets again, from the streets to the lunatic asylum, and from the lunatic asylum once more to the streets, and then to an inebriate retreat—another department of the Home Office—and when a person got into any one of those institutions there was no official knowledge and no means of obtaining official knowledge of his previous career, or of the institutions which he had been in before. Nor was there, in many cases, any machinery by which a person could be transferred from one to another. All that seemed to him to show that the administration of those matters was very defective, showing a want of organisation and a waste of power which was discreditable to our civilisation. What he would suggest—and what he had suggested to the Feeble-minded Commission—was that there should be one central body which should deal with all cases of defective mind, so that the feeble-minded child which had been educated in a special school, instead of being, as now, at the age of sixteen turned into the streets, should be detained beyond the age of sixteen and not automatically discharged. In the case of the female child, in a very large number of cases it reappeared within a year in the asylums and in the lying-in wards of the workhouses. Those children were prolific mothers of many more or less feeble-minded children. That work could be done in one central office, so that when the feeble-minded child was sixteen years of age it could be drafted off at once without having a chance of being at liberty and degenerating into a wastrel. It should be

drafted into a labour colony, or a lunatic asylum, or whatever special institution would be more appropriate for it. Then there was the borderline case; the case which was constantly toppling over the edge of insanity in one direction or another; the man who was now an inebriate, now an inmate of a lunatic asylum, now in the workhouse, and now, again, in goal. Such a man should have his *dossier* in the central office, and should never be discharged from any one of those institutions without a very good reason, and without the question being considered whether he should be transferred to another. So instead of alternating his periods of detention with periods of complete liberty in the streets, during which he was doing incalculable mischief, he would be detained in one particular institution, or transferred from class to class, as his case demanded. In that way a continuous record would be kept of him throughout his life, and the time would come in the lives of each of those persons when the central authority would consider the case and say that particular person had had trial enough; it was evident he was a person who would never be anything but a charge upon society; that it was of no use to give him any further liberty or trial, and therefore an order must be made for his permanent detention, whether he was an inebriate or a criminal, or a lunatic, or a feeble-minded person, or a wastrel, so that for the rest of his life he would be prevented from being a burden and mischief to society. That was a direction in which he thought the Association might fairly make representations. But there were other propositions made by Dr. Clouston which he very much regretted to differ about, and he never differed from Dr. Clouston without having an uneasy feeling that he might be wrong. That gentleman had said that owing to his advice some scores of marriages had been prevented, the marriage of couples, one of whom was, at any rate, if not of unsound mind—and the question could not have arisen if they had been insane—the subject of mental deficiency or mental instability. He wondered whether Dr. Clouston, as he neared the close of a career which all hoped would be very much prolonged, would not look back with much regret and remorse on the recommendations which he had made; for he, Dr. Mercier, thought that if all the marriages of persons into families in which there was mental instability were prevented, in the first place the marriage rate would sink to an



alarming degree, and in the second place the result would be that the next generation would be at a level of uniform mediocrity. It was true they might then save themselves from having to maintain a certain number of persons of unsound mind ; but, on the other hand, who knew how many brilliant geniuses society would be deprived of, and who knew that Dr. Clouston was not responsible for the absence from their midst of a person who might, before now, have solved the question of aerial navigation, and discovered the origin and cure of cancer, and even of insanity itself? It seemed, therefore, that the Association had no cause to thank Dr. Clouston for his prevention of disease in that way. If they were to start on the path of education he thought they should begin with their own profession. He thought they would be doing a very good and useful work if they were to educate certain medical men, to whom so many cases of mental disease went in the first instance, not to send cases of incipient melancholia on a sea voyage ; if they were to educate them not to send cases of early acute insanity into nursing homes, to be placed in solitude and be massaged. Those were lines on which he thought they might very fairly launch out with some prospect of doing good. But if they were to recommend that cases of melancholia should be notified to the central authority, and if they were to recommend that persons in whose families there was any taint of mental instability should not marry, he feared that, after all, they would do more harm than good.

Dr. CARSWELL said he was sure all present felt that day what he had himself always felt when listening to Dr. Clouston, that had that gentleman chosen to follow the career of a picture-painter—an artist in colour instead of, as he was, an artist in the work of medicine—he would have been an impressionist. He thought Dr. Clouston's contributions had always the characteristic about them that they were vivid, they were colour impressions, they suggested more than they stated. And he ventured to say that Dr. Mercier, when he called his own contribution a discordant note, misnamed it. In his view Dr. Mercier simply came in to supply the draftsman-ship which was lacking in the original colour picture. He thought Dr. Clouston's picture would not bear the criticism of the draftsman at all, and it was not intended that it should be subjected to that kind of criticism. He thought most good

would be derived from the contribution by looking upon it as a suggestion of things which ought to be, and which are to be. He did not know whether he would be trespassing beyond the scope of the address if he said that Dr. Clouston was also a prophet; at any rate his contribution that day appeared to indicate that: that however valuable blue-books were, they had created in Dr. Clouston's mind, as they had in many other minds, the feeling that, having had lunacy blue-books for the last fifty years something further was now required; it was necessary to get the lunacy blue-books and lunacy statistics brought into line with the vital statistics which they had been accustomed to, and which had yielded such brilliant results and suggestions towards medical and social effort in sanitary science. Dr. Clouston expressed the hope that medical officers of health, if they had their attention directed to questions of mental health, would begin to think seriously of such questions as the drinking habits of the community, and of the marriages of drunkards and the unfit. Surely those officers were long enough under the impression that tuberculosis, for example, was an inheritable disease; yet one found no prominence given to the question of marriage relationships in the reports of medical officers of health during the last thirty or forty years. And surely the alcohol question had been as present to medical officers of health as to psychologists. It was known that although alcohol exhibited its immediate physiological effects on the brain, yet it caused more disastrous results on the kidneys and the liver and the arteries. Medical officers of health were well aware of that, and yet we did not find either of those questions bulking with the prominence which Dr. Clouston desired, and which he apparently believed would be seen if those officers were to direct their attention to mental medicine in their work and in their reports. That he regarded as a most significant fact; and it was worth while to inquire why medical officers of health had apparently attached less importance to heredity and alcoholism than Dr. Clouston suggested they should have done. Medical officers of health had contributed towards the reduction of the death rate from phthisis long before they knew that phthisis was not so pronouncedly due to a faulty inheritance as they now knew. In the course of thirty years the death rate from phthisis had fallen 50 *per cent.* Why? Because medical officers of health and sanitary inspectors and local government authorities had directed

their attention to the removal of faulty conditions of living. And who could deny that the same efforts would help to reduce insanity? The real position seemed to be just the opposite of that suggested by Dr. Clouston, and was, in effect, that the medico-psychologist should follow the same line of effort and adopt a similar attitude of mind towards the problems involved in the prevention of mental diseases that the medical officers of health introduced into their work. He thought it was not a great stretch of the imagination to hope to see a lunacy blue-book which would be as interesting in regard to lunacy as Dr. Branthwaite's reports were in regard to inebriety. He thought the blue-book should contain more than the number of people in different asylums, and the percentage they bore to the general population; that it should correlate the lunacy rate with the other returns relating to public health. He, Dr. Carswell, did not know anything about Dorset and other large English counties, but he knew that if one took the general death rate and the lunacy rate of a city like Glasgow, and attempted to compare them in the mass, they would go astray. They must take the lunacy rates of certain districts and compare them with other districts. There was a whole field of effort lying ready to hand, and, as Dr. Clouston had said, all they required to do was to organise effort towards doing it. In Scotland there was not too large an area in the whole country to expect that the general Board of Lunacy might take up that work; and he thought it was one of the happiest omens that the Local Government Board of Scotland and the Board of Lunacy for Scotland had got into close and intimate relationship. Dr. Clouston's reference to their relationships seemed hardly quite correct. The connection between those two Boards really began with the abolition of what was called the Board of Supervision, which had been irreverently called the "Board of Superstition," and the substitution of the Local Government Board, specially through the efforts of Dr. Leslie Mackenzie. He hoped and believed that the work which Dr. Clouston so eloquently and picturesquely pleaded for would be undertaken in Scotland.

Dr. HAYES NEWINGTON said he would like to interject a few remarks from the philistine point of view of a public health committee. Looking at the proposition from the layman's position, the first idea was that it was going to cost money in

order to do the thing well. Merely general opinions did not go very far. There was already an enormous difficulty in getting accurate and reliable information on medical matters, if money had to be expended in the process. But if an absolutely good cause for spending money was shown, then, he felt sure, the money would be forthcoming. With regard to the prevention of insanity by the work of medical officers of health, might it not be said that as the physical basis of mind was an accepted belief, much was already done in present sanitary work for the mind by regulating the physical factors mentioned by Dr. Clouston? With regard to another point, that of education, Dr. Clouston struck a right nail on the head. There was much scope for such work as he desired on the Education Committee, and there was more hope of good being effected by the help of the last Education Act. Many objected to that Act for many reasons, political and otherwise, but there was no question that the introduction of education Acts enabling the primary education to be varied, adjusted, to be judiciously extended in suitable cases into the secondary, was a help from a psychiatric point of view. He would point to London as an example of action. London appointed Dr. Shuttleworth, an esteemed colleague, to go systematically through all the children, and with very good results, and he thought the same practice was likely to spread through all education committees now. Men of common sense had studied the matter, and acknowledged that one could not give the same education to A as to B, and that if an attempt be made to give the same education to all there would be disaster from one side or the other. In that relation he thought Dr. Clouston's recommendation would be of the greatest value. If they could get the bodies who were ultimately responsible for education to see the possibilities for either good or bad so much good would result. The marriage question was a very different matter, and a difficult one. His own feeling was that they might do a large amount of mischief by incomplete work; it would be far better not to interfere at all.

Dr. CONOLLY NORMAN said the subject was so large and so discursive that it was impossible for any speaker to deal with more than a few points here and there. Dr. Clouston had said that it might be objected to the scheme he had shadowed forth that the data on which they were to work were at present



insufficient or deficient. But Dr. Norman did not think that was much of an objection, because the data on which all the ancillary sciences of medicine started as separate branches of human endeavour were very deficient at the beginning; and they had attained their present position only by differentiation and prolonged work. As far as he could gather, and he endeavoured to follow Dr. Clouston closely, the idea was that the attention to the mental health of the community generally, not of the particular fraction which was under the care of members of the Association, should be handed over to medical officers of health. And the author had said that that was not a counsel of perfection, in which Dr. Norman agreed with him, thinking that it was a counsel of imperfection. At the present time medical officers of health said they had more to do than they could accomplish; they were persons who were not specialists, they had not made a particular study of mental conditions, and he thought it would be a retrograde step to hand over to such folk the work which it was required to have done. What appeared to Dr. Norman to be needed was a general co-ordinating centre, which would take account of the health of the community, both mental and physical, on large lines. Professor Clifford Allbutt, at the dinner the previous evening, referred to the establishment of a ministry of public health. That was what was required; and, as a portion of that, and co-ordinated with the general working, should be a department which would look after mental health. But he did not think it should be an addendum to the work of the present medical officer of health. Such a course was practically impossible, and he regarded it as distinctly retrograde. Dr. Mercier had somewhat anticipated him in speaking of co-ordination when he referred to the inco-ordinate condition of the various lunacy departments in this country. Dr. Mercier enumerated six, and mentioned seven; and Dr. Norman thought, with all respect to Dr. Mercier, that there were eight bodies which looked after lunatics, or potential lunatics; and their lack of combined working led to the bad results which Dr. Mercier had described, such results as he had painful experience of a few weeks ago, when a man was sent from prison to Dr. Norman's asylum with an intimation that he was a drinker; and that was all he heard about him. He began to improve very rapidly and, in consequence of Dr. Norman not having

been informed by the prison authorities that he was a most accomplished and expert burglar, in the period of comparative liberty to which he very soon attained he "burgled" the residence of one of the officers and stole £50 worth of jewellery, on the proceeds of which he believed he had disported himself in New York. A great many subjects had been dwelt upon, medical pedagogy among the number. That was a distinct branch of medical endeavour in several Continental countries, and of late years he thought we were at least approaching in England to ripe practice in this subject. Dr. Clouston went a little out of his way to talk about the advice which members of the speciality were asked for, and which was occasionally acted on in reference to marriage. But all of them had insane relations—even every one of those present to-day. If a man had no insane relations in his family tree it was because he had no family tree. In the country in which he lived statisticians had discovered—whether rightly or wrongly he did not pretend to say—that there was one lunatic to every 178 of the whole population. But fortunately in the human race from its commencement, whether in Adam or the ape, there was a tremendous tendency, if the stream was diverted a little, to resume its course; and the whole current of the human race was towards sanity. Therefore the insane died out and the stock returned to the normal. Thus he did not regard the marriage of persons who were supposed to suffer from some hereditary tendency—as all did—as being so dangerous as had been supposed. Dr. Norman would point out that Dr. Clouston's suggestions, if he had lived 130 years ago, would have prevented the procreation of that ornament of English literature and of the human race, Charles Lamb, whose family on all sides was saturated with insanity. Someone had spoken of "intermingling," which Dr. Norman regarded as a bad phrase when applied to the various bodies responsible for the departments of public health. He did not think there should be an intermingling, but a co-ordination of all departments of public health, mental and physical; that all should be brought under one head, and placed, probably, under one minister, who he thought would be one of the most important ministers in the cabinet.

Dr. DRAPES said he would like to suggest one or two matters which had not yet been mentioned in the discussion. Much

stress had been laid on the education of their profession. If they desired to have that subject brought home strenuously and effectively to the general public it must be the general practitioner who should be thoroughly grounded in mental hygiene. He thought sufficient attention was not paid to that in medical schools, and it should be more insisted upon in the future that the medical student should be thoroughly educated in the principals of neurology and psychology if he meant to effectually set a stop to the alarming increase of insanity which had been going on continuously, and he feared would go on still. So he thought, to use an Irishism, they might go lower still than the bottom suggested by Dr. Mercier, namely, to the school-children. He did not think the instruction in the principles of physiology was at all sufficiently insisted upon in schools. It was of great importance to take special care—differential care—of the education of the feeble-minded, but he thought it was of far more importance to take care of the education of the sound children, to bring them up to be thoroughly instructed in a knowledge of their own bodies and minds, and the dangers which would ensue from their deviating from the normal principles of hygiene and health. While they admitted that the entire functions of the whole body were absolutely dependent for their efficient working on the brain and upon its healthy action, the mental functions seemed to be the only ones which were left out of our systems of education.

Dr. YELLOWLEES said he felt that the valuable discussion which had taken place, and the very opportune and important remarks of Professor Clifford Allbutt at the dinner as to the appointment of a minister of health, made it essential that the annual meeting of the Association should not separate without doing something in the direction of giving effect to those earnest and very practical suggestions. His own feeling was very strong that all Dr. Clouston had urged that morning would remain unattainable—the co-ordination and co-operation of many medical and quasi-medical bodies—unless they were all ranged under one head, and were all parts of one great supreme department, and unless the head of that department were to have a place in the House of Commons, and a position which would imply that his advice was listened to by the House. He was sure the profession had greatly suffered from want of due representation. He asked his hearers to think of

the number of lawyers in the House of Commons in comparison with the number of doctors. Lawyers got whatever they wanted; doctors made vain attempts, and got nothing. He thought that the present Government should be approached in this matter by all the medical associations.

Dr. YELLOWLEES then moved the following resolution: "That it be remitted by the annual meeting of the Medico-Psychological Association to the Parliamentary Committee of the Association to co-operate with the British Medical Association, or with any committee of other Medical Associations, with a view to securing the appointment of a minister of health, with a seat in the House of Commons, or to initiate such proceedings." This was seconded by Dr. HAYES NEWINGTON and carried unanimously.

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*The Sanatorium Treatment of Active Insanity by Rest in Bed in the Open Air.* By C. C. EASTERBROOK, M.A., M.D., F.R.C.P., Medical Superintendent, Ayr District Asylum, Ayr.

DURING the past year I have systematically employed rest in bed in the open air as a special method in the treatment of all patients newly admitted to the Ayr District Asylum; and during the past six months I have carried out the same method in the treatment of all resident patients exhibiting relapses or phases of active insanity, the latter including the most difficult and most dangerous cases in the institution. At present, therefore, all patients in Ayr Asylum who manifest their insanity in such active forms as marked morbid excitement, exaltation or depression, distinct delirium, confusion or stupor, vivid hallucination and delusion, active homicidal or suicidal tendency, impulsiveness and the like, are being treated by the method of rest in bed in the open air, a method which may be conveniently termed the sanatorium or open-air rest treatment of active insanity. Although it is yet too soon to speak as to the ultimate therapeutic value of this system, and several years



must necessarily elapse before its effect on the recovery rate in insanity can be definitely ascertained, even a short experience has sufficed to demonstrate the immediate benefits and strong points of the system, and to show that it is a more satisfactory method of treating those who are actively insane than either the outdoor exercise or indoor rest procedures hitherto in vogue, and that, indeed, it secures the advantages without the disadvantages of the exercise and rest systems combined. The particular combination of rest in the recumbent position and in the fresh air of the open would indeed seem to be Nature's specific for at least the alleviation if not the cure of an attack of insanity; and the method is not only based on sound physiology and correct pathology, but it is so easily carried out in practice, it so obviously benefits the health of the patients—not to mention also that of their nurses—and withal it is so pleasant a remedy both in the receiving and the giving, that even a comparatively short experience of its employment has convinced me that the systematic open-air rest treatment of active insanity has come to stay, and that at no distant date it will secure a wide sphere of application in asylum practice, and in the treatment of the psychoses and neuroses outside of asylums. Before describing the sanatorium treatment of active insanity I wish to put before you the stages in its development, and to show how, after an apprenticeship in the exercise system of treating active insanity, I came to adopt the rest method, and by allying the latter with the open-air cure, as suggested by the modern treatment of pulmonary tubercle, I arrived at the combined method of rest in bed in the open air, which has been in vogue at Ayr Asylum during the past year.

(I) *The Asylum or Outdoor Exercise Treatment of Active Insanity.*

From 1894 to 1902 I followed the exercise system of asylum practice which has prevailed since the dawn of modern psychiatry, and still has many advocates as a treatment of active insanity. By this system, if a newly admitted patient appears to be in fair physical condition and to have no important complication of heart, lungs, kidneys, and the like, if, in short, he seems to be sufficiently strong and healthy, he is

sent to a ward of asylum dayroom or parlour type, placed for a time under special observation by himself, or in a group with others, and prescribed a course of treatment, an essential feature of which is a certain amount of outdoor exercise daily. If, however, his physical condition, general or local, is such as to indicate confinement to bed, he is sent to the hospital department and treated in bed until it is thought that he is sufficiently able physically to be out of bed and to take exercise daily. The foregoing procedure may be conveniently distinguished as the asylum or outdoor exercise treatment of active insanity. In my experience the intrinsic advantage of this system is the more or less rapid physical improvement of the patient, that is to say, an early improvement in the appearance and condition of the skin, in the condition of the muscles, in the state of the tongue, appetite and digestion, in the action of the bowels, liver and kidneys, in the quality of the blood and circulation, and sooner or later in the weight. The physical improvement is followed by the improvement in the sleep and mental condition in the great majority of cases; that is to say, the improvement in the condition of the general bodily organs usually precedes the improvement in the state of the cerebral cortex and lower nervous centres. This retardation of the mental improvement, in my experience, constitutes the weak point of the outdoor exercise method in the treatment of active insanity, and is due, apart from the factor of the inherent powers of recuperation of the nerve centres themselves, not to the fact of the patient being out of doors, but to the effect of exercise in keeping up an excitation of the disordered nervous centres, and thus in tending to consume unduly their diminishing chromatic substance and store of energy. The treatment of active insanity by exercise has, I think, arisen from the idea that what is good for the muscles and bodily organs generally is likewise good for the disordered brain and nerve centres. There are, however, good reasons for believing that there is an essential difference between the metabolism of the muscles and body generally and that of the nervous system. Thus the observations of Voit and many others (Schäfer's *Text-Book of Physiology*) show that starving men and animals live at the expense of their fat, muscles and glandular organs, and that in fatal cases the fat and muscles suffer the greatest relative loss in weight, whereas the central

nervous system suffers the least. Then, again, as F. Gotch (*op. cit.*) has pointed out, whereas during muscular activity, mechanical, electrical, chemical and thermal changes occur, during nervous activity, electrical changes alone are readily demonstrable, chemical changes are very slight, and thermal changes have as yet not been observed. As Gotch remarks, "the negative character of the evidence of (nervous) metabolism is an important circumstance in connection with the rationale of nerve phenomena, and such positive data as exist support the conclusion that nerve metabolism must be very small in amount." Lastly, Atwater's famous experiment (*U.S.A. Department of Agriculture, Bulletin No. 44, 1897*) was perhaps the first experimental demonstration of the essential difference between nervous and muscular metabolism. He placed a man, kept for the time on a fixed diet and under the other necessary conditions of the experiment, in a respiration calorimeter for twelve days, divided into five successive periods, of rest ( $1\frac{1}{2}$  days), severe mental work (3 days), absolute rest (3 days), severe muscular work (3 days), and rest ( $1\frac{1}{2}$  days), and he found that during the period of severe mental work the temperature of the air in the chamber and the amount of carbonic acid given off remained the same as during the days at rest, and that during the period of hard muscular work the temperature distinctly rose and the amount of carbonic acid given off was very conspicuously increased. While, therefore, the metabolism of the nervous centres, as judged by chemical, thermal and mechanical effects, is small in amount in comparison to that of the muscles, electrical phenomena during nervous activity are characteristic features, and indeed the central nervous system may, with a considerable approximation to the truth, be regarded in the light of a battery, which during life is more or less constantly engendering energy from its stores of chromatic or other substance, and therefore tends to become exhausted or fatigued, specially in those diseases, as the psychoses and neuroses, in which chromatolysis is well recognised as an outstanding feature.

As is well known, outdoor exercise, if unskilfully employed in the treatment of neuroses and psychoses, leads to the evils of fatigue, such as bodily and mental exhaustion, ready exhaustibility, insomnia, and specific sensory and motor symptoms of fatigue (as pains in the head, back or limbs, tenderness over the

spine or in other areas, fine intention tremors and local twitchings of muscles, increased tendon reflexes and the like), also such effects as impairment of appetite and digestion, and loss in weight. The later researches on the subject by Mosso, of Turin (*Fatigue*: Swan, Sonnenschein & Co., London, 1904), and others, show that fatigue, however produced, whether by muscle work or by brain work, is essentially a nervous phenomenon, an exhaustion and poisoning of the nerve centres, and consequently the idea that exercise in the treatment of active insanity serves as a safety-valve for getting rid of superfluous energy has become more or less exploded. Systematic outdoor exercise is therefore of doubtful utility in the treatment of active insanity, in which the finer symptoms of nervous irritation and exhaustion are so common. Occasional mild exercise is allowable for the benefit of the muscles and non-nervous organs of the body, provided that it does not give rise to symptoms of exhaustion; and even this amount of exercise is contra-indicated if the patient happens to already exhibit the finer signs of fatigue. But just as rest and exercise are both necessary to the preservation of health, so are they the complement of one another in the treatment of disease, and carefully regulated outdoor exercise is specially useful during convalescence from active insanity. It is, of course, hardly necessary to refer here to the value of regular outdoor exercise in the hygiene of the chronic insane. Not being satisfied with the suitability of the outdoor exercise system for the treatment and observation of newly admitted and actively insane patients, I ceased to employ it in this connection in 1902.

(2) *The Hospital or Indoor Rest Treatment of Active Insanity.*

Since the summer of 1902 it has been my regular practice to receive all patients admitted to Ayr Asylum into wards of hospital type, and to prescribe a preliminary course of bed treatment, during which regular observations are made of the temperature, pulse, respiration, action of the bowels, state of the urine, amount of sleep, weight, mental condition, and any other changes of note, physical and psychical, these observations, and also the dietary and medicines prescribed, being recorded on charts, of which the accompanying is a specimen (see *fac-simile* of Ayr District Asylum chart). These charts, which are ruled on the



back for notes on progress, are the same size (foolscap) as the pages of the case-books, into which they are finally collected from the wards, and pasted in their proper places following the records of the history and condition on admission of the various patients. It will be seen that the above procedure is simply an application of general hospital methods to the case of the newly admitted insane, both those obviously suggesting and those apparently not requiring treatment in hospital; and as its distinctive feature is the preliminary course of rest in bed in a ward of hospital type, the method may be conveniently distinguished as the hospital or indoor rest treatment of active insanity. Having thus had considerable experience of both the outdoor exercise and indoor rest systems in the observation and treatment of actively insane persons, I have no hesitation in recommending, on both clinical and therapeutical grounds, the system of placing all newly admitted insane patients in bed amidst hospital surroundings for at least an initial period of observation and treatment. It may seem strange at this time of day to have to put in a plea for the systematic bed-side or clinical observation and treatment of those whose insanity is sufficiently active to cause them to be sent into asylums, especially when we remember that psychiatrists are constantly preaching the fact that the insane man is a sick man, and that insanity is a disease—a disease of the brain, nervous system and body in general. The fact, however, that the older asylum or ambulatory method of treating and observing those who are actively insane is still largely followed in asylums, is a sufficient reason, and calls for a statement of the advantages which in my experience attach to the system of placing all newly admitted patients in bed amid hospital surroundings for at least a preliminary period of observation and treatment. This period need not exceed two to three days in a small proportion of cases, in which the morbid mental and nervous condition is quiescent and the bodily health is fair; but even this short period in such cases suffices to secure the advantages of the hospital system, which are chiefly as follows:

*Firstly*, it is a good procedure from the point of view of the *physician*, inasmuch as it enables him to make a more satisfactory examination of the patient's physical and mental condition from day to day. All the bodily functions, discharges and symptoms of the patient, his dieting and feeding, medication, etc., being

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<td>-194°</td> <td></td> <td>-260°</td> <td></td> </tr> <tr> <td>-195°</td> <td></td> <td>-261°</td> <td></td> </tr> <tr> <td>-196°</td> <td></td> <td>-262°</td> <td></td> </tr> <tr> <td>-197°</td> <td></td> <td>-263°</td> <td></td> </tr> <tr> <td>-198°</td> <td></td> <td>-264°</td> <td></td> </tr> <tr> <td>-199°</td> <td></td> <td>-265°</td> <td></td> </tr> <tr> <td>-200°</td> <td></td> <td>-266°</td> <td></td> </tr> <tr> <td>-201°</td> <td></td> <td>-267°</td> <td></td> </tr> <tr> <td>-202°</td> <td></td> <td>-268°</td> <td></td> </tr> <tr> <td>-203°</td> <td></td> <td>-269°</td> <td></td> </tr> <tr> <td>-204°</td> <td></td> <td>-270°</td> <td></td> </tr> <tr> <td>-205°</td> <td></td> <td>-271°</td> <td></td> </tr> <tr> <td>-206°</td> <td></td> <td>-272°</td> <td></td> </tr> <tr> <td>-207°</td> <td></td> <td>-273°</td> <td></td> </tr> <tr> <td>-208°</td> <td></td> <td>-274°</td> <td></td> </tr> <tr> <td>-209°</td> <td></td> <td>-275°</td> <td></td> </tr> <tr> <td>-210°</td> <td></td> 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</tr></tbody></table>						TEMPERATURE FAHRENHEIT SCALE.		TEMPERATURE CENTIGRADE SCALE.		106°		40°		105°		39°		104°		38°		103°		37°		102°		36°		101°		35°		100°		34°		99°		33°		98°		32°		97°		31°		96°		30°		95°		29°		94°		28°		93°		27°		92°		26°		91°		25°		90°		24°		89°		23°		88°		22°		87°		21°		86°		20°		85°		19°		84°		18°		83°		17°		82°		16°		81°		15°		80°		14°		79°		13°		78°		12°		77°		11°		76°		10°		75°		9°		74°		8°		73°		7°		72°		6°		71°		5°		70°		4°		69°		3°		68°		2°		67°		1°		66°		0°		65°		-1°		64°		-2°		63°		-3°		62°		-4°		61°		-5°		60°		-6°		59°		-7°		58°		-8°		57°		-9°		56°		-10°		55°		-11°		54°		-12°		53°		-13°		52°		-14°		51°		-15°		50°		-16°		49°		-17°		48°		-18°		47°		-19°		46°		-20°		45°		-21°		44°		-22°		43°		-23°		42°		-24°		41°		-25°		40°		-26°		39°		-27°		38°		-28°		37°		-29°		36°		-30°		35°		-31°		34°		-32°		33°		-33°		32°		-34°		31°		-35°		30°		-36°		29°		-37°		28°		-38°		27°		-39°		26°		-40°		25°		-41°		24°		-42°		23°		-43°		22°		-44°		21°		-45°		20°		-46°		19°		-47°		18°		-48°		17°		-49°		16°		-50°		15°		-51°		14°		-52°		13°		-53°		12°		-54°		11°		-55°		10°		-56°		9°		-57°		8°		-58°		7°		-59°		6°		-60°		5°		-61°		4°		-62°		3°		-63°		2°		-64°		1°		-65°		0°		-66°		-1°		-67°		-2°		-68°		-3°		-69°		-4°		-70°		-5°		-71°		-6°		-72°		-7°		-73°		-8°		-74°		-9°		-75°		-10°		-76°		-11°		-77°		-12°		-78°		-13°		-79°		-14°		-80°		-15°		-81°		-16°		-82°		-17°		-83°		-18°		-84°		-19°		-85°		-20°		-86°		-21°		-87°		-22°		-88°		-23°		-89°		-24°		-90°		-25°		-91°		-26°		-92°		-27°		-93°		-28°		-94°		-29°		-95°		-30°		-96°		-31°		-97°		-32°		-98°		-33°		-99°		-34°		-100°		-35°		-101°		-36°		-102°		-37°		-103°		-38°		-104°		-39°		-105°		-40°		-106°		-41°		-107°		-42°		-108°		-43°		-109°		-44°		-110°		-45°		-111°		-46°		-112°		-47°		-113°		-48°		-114°		-49°		-115°		-50°		-116°		-51°		-117°		-52°		-118°		-53°		-119°		-54°		-120°		-55°		-121°		-56°		-122°		-57°		-123°		-58°		-124°		-59°		-125°		-60°		-126°		-61°		-127°		-62°		-128°		-63°		-129°		-64°		-130°		-65°		-131°		-66°		-132°		-67°		-133°		-68°		-134°		-69°		-135°		-70°		-136°		-71°		-137°		-72°		-138°		-73°		-139°		-74°		-140°		-75°		-141°		-76°		-142°		-77°		-143°		-78°		-144°		-79°		-145°		-80°		-146°		-81°		-147°		-82°		-148°		-83°		-149°		-84°		-150°		-85°		-151°		-86°		-152°		-87°		-153°		-88°		-154°		-89°		-155°		-90°		-156°		-91°		-157°		-92°		-158°		-93°		-159°		-94°		-160°		-95°		-161°		-96°		-162°		-97°		-163°		-98°		-164°		-99°		-165°		-100°		-166°		-101°		-167°		-102°		-168°		-103°		-169°		-104°		-170°		-105°		-171°		-106°		-172°		-107°		-173°		-108°		-174°		-109°		-175°		-110°		-176°		-111°		-177°		-112°		-178°		-113°		-179°		-114°		-180°		-115°		-181°		-116°		-182°		-117°		-183°		-118°		-184°		-119°		-185°		-120°		-186°		-121°		-187°		-122°		-188°		-123°		-189°		-124°		-190°		-125°		-191°		-126°		-192°		-127°		-193°		-128°		-194°		-129°		-195°		-130°		-196°		-131°		-197°		-132°		-198°		-133°		-199°		-134°		-200°		-135°		-201°		-136°		-202°		-137°		-203°		-138°		-204°		-139°		-205°		-140°		-206°		-141°		-207°		-142°		-208°		-143°		-209°		-144°		-210°		-145°		-211°		-146°		-212°		-147°		-213°		-148°		-214°		-149°		-215°		-150°		-216°		-151°		-217°		-152°		-218°		-153°		-219°		-154°		-220°		-155°		-221°		-156°		-222°		-157°		-223°		-158°		-224°		-159°		-225°		-160°		-226°		-161°		-227°		-162°		-228°		-163°		-229°		-164°		-230°		-165°		-231°		-166°		-232°		-167°		-233°		-168°		-234°		-169°		-235°		-170°		-236°		-171°		-237°		-172°		-238°		-173°		-239°		-174°		-240°		-175°		-241°		-176°		-242°		-177°		-243°		-178°		-244°		-179°		-245°		-180°		-246°		-181°		-247°		-182°		-248°		-183°		-249°		-184°		-250°		-185°		-251°		-186°		-252°		-187°		-253°		-188°		-254°		-189°		-255°		-190°		-256°		-191°		-257°		-192°		-258°		-193°		-259°		-194°		-260°		-195°		-261°		-196°		-262°		-197°		-263°		-198°		-264°		-199°		-265°		-200°		-266°		-201°		-267°		-202°		-268°		-203°		-269°		-204°		-270°		-205°		-271°		-206°		-272°		-207°		-273°		-208°		-274°		-209°		-275°		-210°		-276°		-211°		-277°		-212°		-278°		-213°		-279°		-214°		-280°		-215°		-281°		-216°		-282°		-217°		-283°		-218°		-284°		-219°		-285°		-220°		-286°		-221°		-287°		-222°		-288°		-223°		-289°		-224°		-290°		-225°		-291°		-226°	
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under constant bedside observation, and the facts being recorded on the clinical chart, any changes which occur are not so likely to escape notice, and so the physician feels that he has a more satisfactory clinical grasp of his patient, and can observe his progress from day to day with greater precision and care.

*Secondly*, it is a good procedure from the point of view of the *nurse* for sundry reasons, chiefly that it enables the nurse likewise to carry out with greater satisfaction to himself or herself the recognised duties of the vocation of nursing; for the patient being under constant supervision in bed has his various requirements more readily observed and more readily attended to. Further, patients who are actively insane, in my experience, are more contented and more manageable in bed than on their feet, and less apt to be dangerous to themselves or others, if so inclined, with the result that the chances of undesirable accidents are considerably reduced; and, consequently, the bed treatment of the actively insane makes the difficult and often trying work of the mental nurse safer, easier, and more pleasant to all concerned. Again, the regular practice of treating all newly admitted insane patients in bed amid hospital surroundings is more effective than all the preaching in making the probationer nurse realise the cardinal fact that insanity is an illness, disorder, or disease of the body corporeal.

*Thirdly and chiefly*, the hospital system is a good procedure from the point of view of the *patient*, partly as the result of the preceding factors—the more satisfactory attendance by physician and nurse—and partly for other reasons. Thus, it is well known that those newly admitted insane patients who are sufficiently in their senses to realise their surroundings often keenly resent being sent to an asylum, regarding it more or less in the light of a degradation and something to be ashamed of, with consequent wounding of the *amour propre*, and the arousal of an attitude of mind which is unfortunate at the outset of treatment and is not conducive to recovery. If such a patient on admission is placed in bed amid hospital surroundings and treated as a sick man, as he really is, he from the outset comes to regard himself as a sick man and not as an injured man, as he is more apt to do if received straightway into the less familiar but readily recognised environment of the ordinary asylum day-room or parlour. And further, the more able-bodied the patient appears to be, the more likely is he, as a rule, to resent his con-

finement, and therefore the more reason for placing this type of new arrival for a time in bed amid hospital surroundings; for, under the circumstances, it is better that his mind should be occupied with the suggestion that he has been and is ill, than that it should become the seat of those more turbulent feelings of injured self-esteem, indignation, and the like, which effectually banish for the time all sense of peace and contentment. Lastly, by placing the new arrival in a comfortable bed, we are employing the most familiar means at once of suggesting and of securing bodily and mental rest. And this raises the important question of the value of systematic indoor rest in the treatment of active insanity, a system which is becoming more prevalent in asylums as a result of the more general adoption of hospital methods during recent years, and which, as is well known, dates from the teaching of Weir Mitchell, of Philadelphia, in 1875 and onwards, as to the value of rest in the treatment of neurasthenia and hysteria. In my experience the intrinsic value of indoor rest in the treatment of the insanities is the more or less rapid improvement in the mental and nervous condition of the patient, evidenced by an early diminution of the intensity of the mental symptoms, resulting in their abatement or disappearance, and by an early diminution of restlessness and of insomnia: in other words, there is characteristically a more or less rapid induction of mental and bodily repose, and of the return of sleep. Following, as a rule, the subsidence of the active cerebral symptoms is a gradual improvement in the physical appearance and condition, nutrition and weight of the patient. During the continuous indoor rest treatment, therefore, the mental improvement commonly precedes the physical. The retardation of the improvement in the physical condition, general metabolism and functional activity of the non-nervous organs is the weak point of the system; and, as is well known, if the indoor rest method is unduly pushed, it leads to the evils attributed to prolonged bodily inactivity, such as sluggish action of the skin, bowels, liver and kidneys, defective metabolism and flaccidity of the muscles, and weakening of the heart and circulation, evils, however, which Weir Mitchell and his followers showed could be obviated in the prolonged rest treatment of neurasthenia by such measures as massage, passive and active movements, baths, electricity, and the like. In my experience, however, of indoor rest in the insanities, in the



great majority of cases it is not necessary to keep the patient in bed for the long period of two, three or more months advocated by the Philadelphian School in the rest treatment of mania, melancholia, neurasthenia, etc., for, as a rule, shorter periods of indoor rest suffice to bring about the characteristic subsidence of the active mental symptoms. For this special therapeutical effect, therefore, of the employment of rest in bed, as well as for the other advantages which attach to the practice of indoor bed treatment on hospital lines from the points of view of the patient, nurse and physician alike, the hospital or indoor rest system is much to be preferred to the older asylum or outdoor exercise method, for purposes both of observation and treatment, and in the case both of newly admitted patients, and of more or less confirmed residents during their relapses and phases of active insanity.

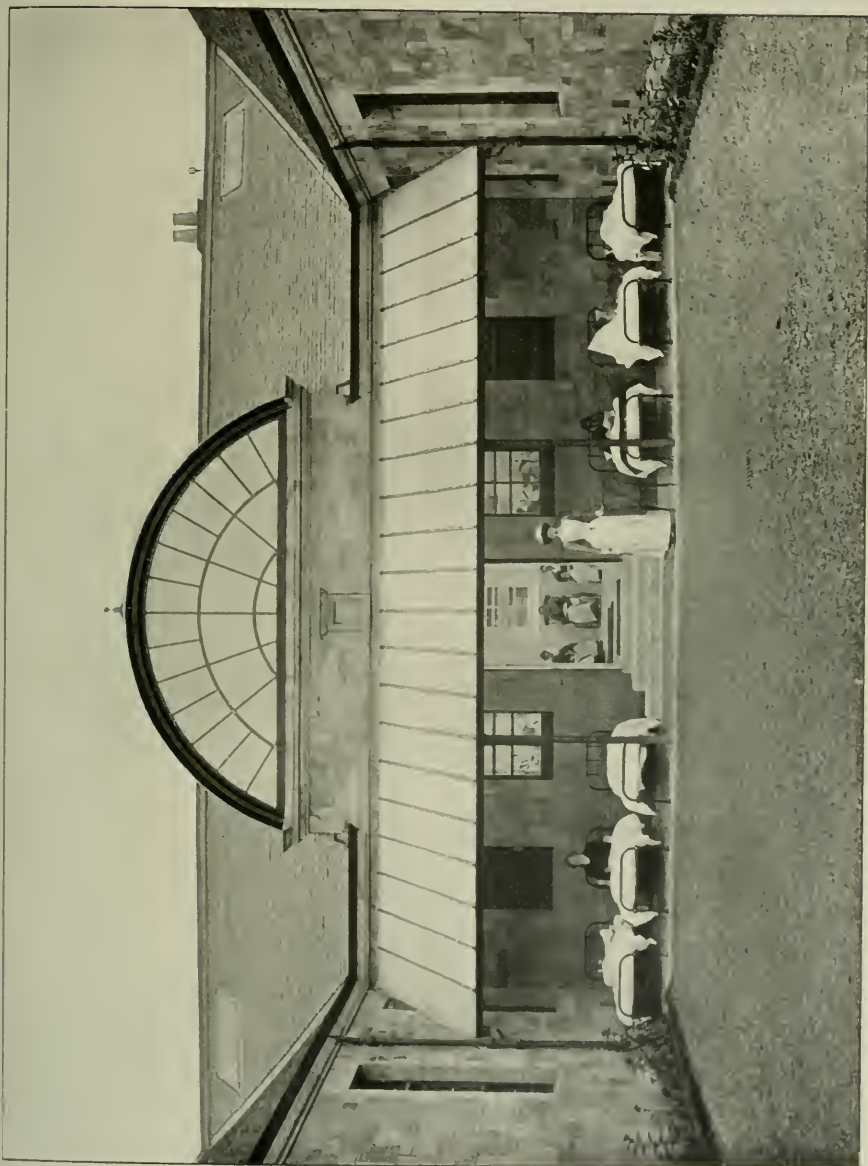
The reason why rest in bed is beneficial in active insanity is fairly obvious in cases of morbid excitement and exaltation, delirium and confusion, vivid hallucinatory and delusional states and impulsiveness. The very fact of being in bed suggests to the patient the calm and rest and induces the sleep which are so desirable for him; and the inactivity of the recumbent attitude, by diminishing the inflow of afferent impressions from the muscles to the sensorium, and therefore the outflow of impulses from the motor and psycho-motor areas to the muscles, leads to a physiological reduction of restlessness. The rationale of rest in morbidly depressed, stuporose, and catatonic cases, in which muscular passivity, resistiveness, and even paresis are often prominent features, is at first sight not so evident. S. J. Franz and G. V. Hamilton (*Amer. Journ. Insan.*, October, 1905), indeed, recently advocated exercise in melancholia, basing this practice on experimental investigations of the mental reaction-time of melancholiacs. They observed that these mental reactions, which are usually retarded, were quickened in the afternoons following morning exercise; also, however, in the morning following a restless or sleepless night. They read the quicker reactions as meaning mental improvement, considered that melancholiacs required "keying up," and concluded that in melancholia there was a condition of lowered irritability, which it was desirable to raise to a normal level by systematic exercise. Franz, however, from later experiments (*Amer. Journ. Psychol.*, January, 1906)

admits that there is no satisfactory evidence to show that the retardation in melancholia is due to lowered irritability, and states that while systematic exercise may lessen the mental retardation and change a habit of slowness into one of quickness, it does not cure the depression. It will be readily agreed that melancholiacs are none the better for restless or sleepless nights, and the conclusion that one comes to is that quicker reactions produced in melancholiacs by the "keying up" process, in the form of systematic exercise or otherwise, are a fictitious sign of mental improvement, being attributable to the irritability of a fatigued, poisoned, or morbidly disordered nervous system. At the same time, owing to the passivity of the musculature and body generally in melancholia, stupor and catatonia, and consequently an earlier tendency to the metabolic and other bodily troubles of prolonged bodily inactivity, the treatment by indoor rest cannot be pushed so freely as in mania without recourse to accompanying measures of actual or modified exercise for the benefit of the muscles and non-nervous organs generally. Apart from this consideration, however, the central fact remains that the actively insane man is a sick man, and urgently sick as regards his nervous system; for whatever views we may hold as to the etiology and pathology of insanity, all are agreed that it is the brain which is proximately affected and is the immediate seat of the mental and nervous symptoms characteristic of insanity. In active insanity, therefore, the brain diseased calls for ease or rest, and on psychologic, physiologic, etiologic, and pathologic grounds brain-rest is more or less effectually secured by absolute rest for the time of the body in bed amid surroundings which are congenial and suggestive of cure.

(3) *The Sanatorium or Outdoor Rest Treatment of Active Insanity.*

The sanatorium or outdoor rest treatment of active insanity is simply the hospital treatment by rest in bed carried out daily in the open air in verandahs attached to the wards, instead of inside the wards and their bed-rooms as formerly. I had been much impressed by the improvement exhibited by tuberculous patients, sane and insane, undergoing the open-air treatment. I also recalled certain sun-bathed days in summer at Morningside when all the sick, infirm and bed-ridden patients in the women's

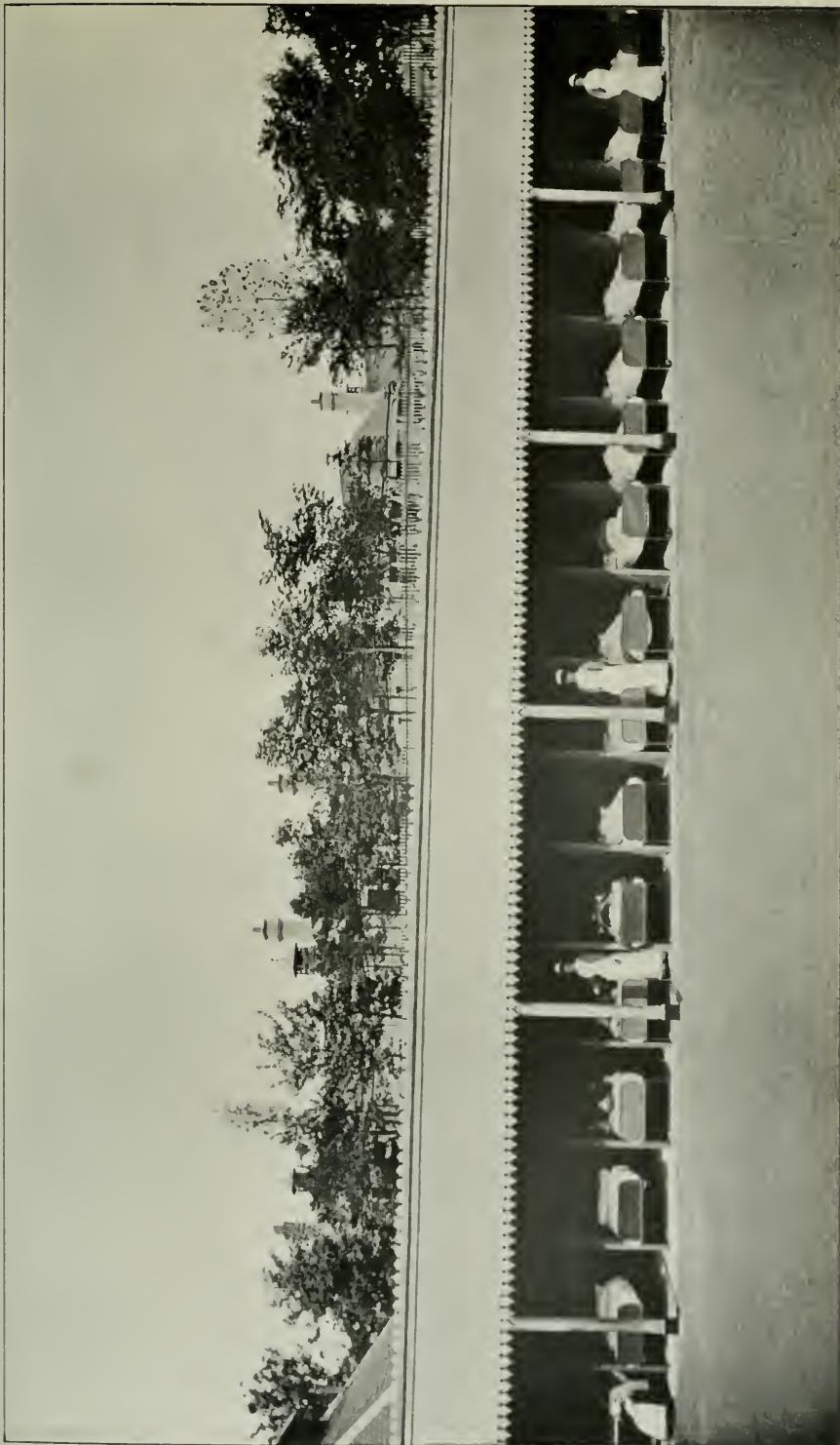
hospital at West House were turned out of doors, in beds, hammocks and chairs, and given an annual outing in the fresh air and sunshine; and I retained vivid impressions of the sunburnt faces, healthier bodies, and more contented minds as the result thereof. Having become convinced from my own experience of the exercise and rest methods that the principle of rest was the correct one in the treatment of the active stages and phases of insanity, I accordingly decided to combine the "rest cure" with the "open-air cure" as a systematic treatment for those acutely and actively insane, and made provision for this purpose in the design, in 1903, of the new hospital at Ayr, with the opening of which, in 1906, the regular practice of the sanatorium treatment of active insanity was commenced. The daily practice of outdoor rest in the case of the newly admitted patients at the reception wards of the hospital proved so successful that I decided to extend its application to all other actively insane patients in the institution, namely, to residents of longer or shorter standing during their relapses or phases of active insanity, including the most difficult and dangerous cases in the asylum. Two large verandahs at the main buildings were accordingly utilised for this purpose at the commencement of the present year, and these patients also soon began to show the special benefits of outdoor rest as compared with those of outdoor exercise or indoor rest and isolation formerly practised in their case. Owing to the common feature of noisy excitement among such cases, and the tendency of one excitable patient to disturb or to be disturbed by others in the vicinity, I found it advisable to have the beds in these verandahs isolated from one another by means of wooden partitions, thus adding the valuable factor of isolation to the open-air rest treatment. Isolation is also secured at the hospital verandahs by the use of temporary screens between the beds, if necessary, or at times by the use of the smaller verandahs at the hospital which are ordinarily occupied by phthisical patients requiring confinement to bed. The accompanying photographs show the system being carried out in the association and isolation verandahs at the hospital and main buildings of the asylum (see photographs of verandahs for sanatorium treatment). They illustrate the operation in combination of two, and sometimes three, potent agents for the amelioration and cure of those actively insane, namely, open air, rest in bed, and isolation if necessary. Experience has already



A. D. A. HOSPITAL. WOMEN'S LARGE VERANDAH.  
To illustrate Dr. Easterbrook's paper.







A. D. A. MAIN BUILDINGS, WOMEN'S ISOLATION VERANDAH.  
To illustrate Dr. EASTERBROOK'S paper.



shown that the verandah accommodation at the hospital could have been increased with advantage, so as to enable all patients in that building who are confined to bed, not only the new and actively insane, but also the sick and infirm—with the exception, obviously, of the excessively weak and moribund—to be exposed daily to the beneficial action of open air. And further, even the more or less able-bodied and quiescent insane, who do not require bed-treatment, and whom we treat in asylums with regular forenoon and afternoon outdoor exercise in walking parties and the like, have likewise benefited from systematic daily exposure to the open air so distinctly as to convince me that this class of patient in asylums does not get a sufficiency of fresh air. The general conclusion I have come to, and the standard to be aimed at in the medical administration of an asylum or similar institution, the primary object of which is to secure the best mental and bodily health attainable for the total population, is to carry out a continuous open-air *régime* during daylight hours, from, approximately, seven in the morning to seven in the evening, throughout as much of the year as possible, for all patients, both those requiring rest or bed-treatment, the only exceptions being the excessively weak, and also those not confined to bed, the only exceptions being those who are engaged in necessary indoor work in wards, dormitories, kitchen, laundry and workshops, the exception in their case, however, taking effect only at the times at which such work is being done. Given suitably sheltered verandahs, even meals can be comfortably taken out of doors during most of the year, and the large central dining-hall of asylums, which is already disappearing with the coming of the villa system, will become a thing of the past. To prevent the good effects of the exposure to the open air during the day from being counteracted during the night, when confinement indoors is obviously necessary for the great majority of the insane in asylums, the essential importance of sufficient air-space and ample ventilation in bedrooms and dormitories cannot be too strongly insisted upon. Under such conditions not only does the asylum population become more healthy and contented, but in time the mortality from tubercle, which is three or four times greater amongst the insane than the sane, should markedly diminish, notwithstanding that the insane are specially susceptible to this disease, as is shown by its frequency among them, and also in my experience amongst



their near relatives. C. J. Shaw (*Journal of Mental Science*, July, 1907) has recently shown that the tuberculo-opsonic index is subject to greater daily variations, and is on the average lower in the non-tuberculous insane than in healthy sane individuals, and finds that the average index is lower in the acute than in the chronic insane, in adolescents than in adults, in melancholiacs than in maniacs, and is specially low in general paralytics.

As regards the sanatorium treatment of the actively insane at Ayr, all newly admitted patients are, after examination, and unless too weak physically to be carried or moved about, placed straightway in the verandahs attached to the reception wards of the hospital, and treated with rest in bed in the open air during daylight hours. The hospital verandahs face the south and have pleasant views of the hospital garden, asylum estate and country beyond. They are sheltered from the north, east and west by the adjoining buildings, and their roof is of rippled glass, which is painted in summer for extra protection from the sun. They are sufficiently deep (9 feet) to project well beyond the foot of the beds, but could with advantage have been made deeper to prevent access of rain when the wind is in the south, a difficulty, however, which is met by means of waterproof sheeting spread over the beds. Unusually strong southerly winds with rain, or specially raw and inclement days, are the only weather conditions which hitherto have caused an occasional day's interruption of the treatment. The beds, which are strong, light and portable and were specially made for the purpose, are carried to and fro between the verandahs and the reception wards as required. The amount of bed and personal clothing worn naturally varies with the season, weather, and out-door temperature mainly. The patients are in the verandahs daily from 7 a.m. to 7.30 p.m. during the spring and summer months, when they receive all their meals out of doors. During the months of November, December and January they are taken out to the verandahs in the mornings at half-past eight o'clock, just after breakfast, and during the months September to March they are brought in from the verandahs in the evenings at 5 o'clock, just before the tea-time (5.30 p.m.) of the day staff. Those patients who are sufficiently strong and exhibit no obvious or fine symptoms of fatigue, are allowed to walk to and from the

verandahs when the beds are being moved in the morning and evening, and to and from the ward lavatory as required during the day; but apart from this, such patients take no exercise during the period of rest in bed. Patients exhibiting signs of fatigue, weaker and easily exhausted patients, are wheeled or carried to and fro as required, and are allowed no exercise at all to begin with. Extreme physical weakness, for obvious reasons, contra-indicates the treatment. The severity of the mental symptoms is no contra-indication, and even in the worst cases does not prevent the treatment from being carried out straightway on admission with safety and propriety to all concerned, given plenty of nursing assistance, a sufficiency of bed and personal clothing for the patient, and an isolation verandah; for even such cases respond satisfactorily to the treatment by rest in bed in the open air, and for the reason of its direct and specific beneficial effects. Even in those comparatively rare cases of intense or fulminant excitement, in which instant action is necessary, in which outdoor exercise is impracticable and in addition harmful from the extra exhaustion induced, in which hot packs and the continuous warm bath are likewise objectionable and not devoid of danger, and in which as a rule the only thing to be done at the time is to isolate the patient in bed with as many nurses as are required, and to administer hypodermics of hyoscine or morphine or other sedatives and hypnotics until the critical excitement subsides, I find that if this bed treatment and isolation with the nurses is conducted out of doors instead of indoors, aided if necessary by the temporary administration of sedatives, the patient gets over the crisis more quickly and looks better at the end of it than by the other procedures, and is able to continue the open-air rest treatment without further difficulty.

What, then, are the effects of rest in bed in the open air in the case of newly admitted and actively insane patients, and wherein do the effects of outdoor rest differ from those of outdoor exercise or indoor rest? *First and foremost*, there is a rapid subsidence of the active mental and nervous symptoms. This, as already mentioned, is the special feature of treatment by indoor rest as compared with outdoor exercise, but it is still more pronounced in rapidity and degree when the rest in bed is conducted in the open air. Thus, there is a rapid amelioration of mania, melancholia, delirium, confusion, stupor, vivid

hallucinatory and delusional manifestations, impulsiveness and mental excitement of all kinds, also of restlessness and of insomnia. The general effect is that the large majority of newly admitted patients show distinct improvement of their various morbid mental states, become less restless, more manageable and more contented, and regain their sleep with greater rapidity than with any other method that I know of. This amelioration of the mental condition occurs after one, two, or three days of outdoor rest in quite a fair proportion of cases, but commonly takes one, two, or three weeks, and in a minority of cases longer. The improvement in the sleep is striking, and in most cases is distinct within a week, the sleep being increased by one, two, or more hours at nights, in addition to occasional light slumbers during the day. *Secondly*, there is a rapid improvement in the physical condition. This, as pointed out before, is the characteristic feature of treatment by outdoor exercise as compared with indoor rest, but is quite as marked and, in some respects, more rapid than with outdoor exercise. Thus, from the first there is a noticeable improvement in the appearance and condition of the skin, which takes on a better colour, becomes clearer, and functionates more satisfactorily. From the first, also, the improvement of the appetite is striking, the patients, in the majority of cases, readily taking their meals themselves and not requiring to be spoon-fed, as is so commonly the case with new patients at first, whether treated by indoor rest or outdoor exercise. Again, there is an early and distinct improvement in the state of the tongue, and of gastric digestion if previously impaired; and actively insane patients with gastric atony and catarrh and coated tongue do specially well with open-air rest. As regards the state of the intestines, it is my practice to secure a preliminary evacuation in all new cases, usually by five grains of calomel on the evening of admission, followed by a tablespoonful of Epsom salts next morning, and if this fails by a copious simple enema the following evening. Apart from this preliminary measure, with open-air rest, the bowels, if previously constipated, become regular in action without the aid of laxatives in the great majority of cases, the exceptions being patients who are specially the subjects of habitual constipation, and who, like similar sane individuals, require to take aperients regularly. Open-air rest does not benefit catarrh of the intestine to the same extent as that of the

stomach, additional local treatment being necessary. Again, distinct improvement occurs in the quality of the blood and circulation, anæmia being markedly benefited by open-air rest, as also conditions of debility and atony of the heart and arteries. The muscles of the limbs become similarly toned up and firmer. And, finally, fat is laid on, and the improvement in general nutrition, once established, is soon marked by a satisfactory increase in weight. This increase in weight commonly amounts to five, six, or seven pounds during the first two to three weeks, on a moderately abundant simple diet consisting largely of milk and milk puddings to begin with, and in my experience the gain in weight sets in earlier with open-air rest than with outdoor exercise. To sum up, in newly admitted cases, with open-air rest, there is a *rapid and simultaneous improvement* of both the mental and the physical condition of the patients; there is not the retardation of the mental improvement which occurs with treatment by outdoor exercise, nor the retardation of the physical improvement which occurs with treatment by indoor rest.

As to the effects of open-air rest and isolation in the case of the resident and more or less chronic patients during their relapses or phases of active insanity. Such patients in the past were chained in fetters or manacles, at a later date restrained in straight-jackets or locked up in miserable dens, and now-a-days are taken out regularly for exercise two or three times a day; or, if exercise fails, as it does in a certain percentage of cases in which it cannot be carried out with safety or propriety, they are treated, as many a chronic invalid at home is treated, with more or less prolonged confinement to bed and bedroom under the observation of a nurse or nurses, sedatives being administered if they cannot be avoided. It may be said that outdoor exercise and indoor rest with isolation are at the present time the common and most hygienic procedures for dealing with this class of patients. All such cases at Ayr are now treated with open-air rest and isolation during the same hours of daylight as the newly admitted patients, namely, 7 a.m. to 7.30 p.m. during spring and summer, and shorter periods during other months; and consequently, indoor isolation during the daytime for active insanity has to all intents and purposes been abolished, like its predecessor, locked indoor isolation or seclusion.



What, then, are the changes noticeable, more particularly in such chronic cases undergoing open-air rest and isolation in place of indoor rest and isolation as formerly, changes which, therefore, must be due largely, if not entirely, to the prolonged daily exposure to the open air? *Firstly*, the patients are undoubtedly improved mentally—that is, they become less excited, less noisy, less restless, and, as their attendants and nurses say, they become more manageable and more contented than formerly. Further, they sleep distinctly better at night and are less noisy at night. This mental and nervous improvement in consequence necessitates the use of still fewer sedatives and hypnotics than formerly. *Secondly*, they are distinctly improved physically; their skin is healthier, their appetite is better, and their bowels become more regular—a very interesting effect of fresh air. Both in the case of newly admitted and chronic patients undergoing verandah treatment the administration of laxatives has distinctly diminished. The preceding observations apply also to the other patients in the wards of the main buildings who are not undergoing bed treatment in the verandahs, but now, like the verandah patients, spend the day in the open air, occupying the courts on to which the verandahs look, except at walking hours and meantime at meals. The verandah patients, however, receive their meals outside, and as the verandahs at the main buildings are specially well sheltered, verandah treatment of the chronically excited patients is carried out in all weathers. The interesting fact has, therefore, been demonstrated that those resident patients who formerly went out for the customary forenoon and afternoon exercise, as in all similar institutions, now, since being exposed regularly to open air during most of the day, are improved physically and mentally, have a healthier appearance, sleep better and are less noisy at nights; and further, in the case of those patients who are subject to distinctly recurrent attacks of active insanity, it is already noticeable that the attacks are becoming less frequent, and when treated with rest and isolation in the open air are less severe and last a shorter time than formerly. At present nearly 10 *per cent.* of the population at Ayr asylum is being treated for active insanity by the method of open-air rest.

Comparing, then, the general therapeutical effects in active insanity of outdoor exercise, indoor rest, and outdoor rest, I

find that outdoor exercise benefits primarily the physical condition but may retard the mental improvement; that indoor rest benefits primarily the mental condition but may retard the physical improvement, and that outdoor rest benefits from the first both the mental and the physical condition. Outdoor rest thus from the outset promotes both mental and physical improvement and so retards neither; further, it avoids the risk of undue exhaustion which attaches to the method of exercise; and lastly, it obviates the evils of bodily inactivity and sluggish metabolism which attach to prolonged indoor rest. Further, my observations show, firstly, that the advantages which have hitherto been attributed to the exercise treatment of active insanity are due, not to the exercise, but to the fact of the patient being out of doors; for regular exposure of the patient to the open air during most of the day without exercise secures the characteristic physical improvement, and more readily if combined with rest in bed. And secondly, that the disadvantages which have hitherto been attributed to the prolonged treatment of the neuroses and psychoses by the indoor rest or Weir Mitchell method are due not so much to the factor of rest as to the confinement indoors; for the sanatorium treatment by rest in bed in the open air not only prevents the evils of sluggish metabolism and the like, but remedies them if present, securing an all-round physical improvement; and in my experience, the open-air rest treatment may with benefit and safety be continued for months if necessary without recourse to massage, active movements, movements with resistance, electrotherapy and the like, it being, however, advisable in such cases to permit the daily walk to and from the verandahs morning and evening, and every now and again to allow the patient to sit up in a chair in the open air for a day or perhaps more, this being done chiefly with the object of ascertaining whether the change will be beneficial, apart from the reason that it introduces in such cases the desirable element of variety in the routine of the treatment. Such variations in prolonged severe cases, however, are not permissible if distinct symptoms of fatigue are present, for continuous absolute rest is the best safeguard against the special risk of fatal exhaustion in such cases.

The duration of the sanatorium treatment in the case of new patients naturally varies. In a small proportion of cases, in which the bodily health is fair and the mental and nervous

condition is quiescent, the period need not exceed two to three days, which I regard as the minimum, and desirable even in such cases, for the purpose partly of the more satisfactory clinical observation thereby secured, and partly for the psychologic and other therapeutic advantages which attach to the system of an initial period of rest in bed for newly admitted patients, as already explained under the hospital system. Commonly a period of one, two, three or four weeks of sanatorium treatment suffices, and so in the great majority of cases the period of rest in bed in the open air does not exceed one month—a considerably shorter period than the two, three and more months commonly employed by the chief advocates of the rest treatment carried on as hitherto indoors. The mental and bodily conditions each constitute the guide as to the duration of the treatment, and it may be stated generally that as soon as the active mental and nervous symptoms have subsided, and physical improvement has become established, as gauged specially by an increase in weight, the rest in bed stage ceases; but the open-air treatment still goes on, the patient being prescribed much sitting with occasional short walks in the hospital garden, until convalescence is fully established, when exercise and work may be pursued with more freedom. During the after-treatment following the period of rest in bed the gain in weight continues to increase satisfactorily. The dietary enjoined during the sanatorium treatment is a simple, digestible, and moderately abundant one, comprising largely milk and milk puddings to begin with, and sooner or later light ordinary diet with extra milk, eggs, and the like, the chief guides being the particular taste of the patient, and the state of the appetite, digestion and weight. It may be mentioned here also that during the sanatorium treatment of active insanity, as with other methods, any concomitant bodily disorders present which specially call for treatment, in addition to that supplied by the rest in bed and the open air, are corrected so far as is possible. And further, during verandah treatment, if the patient is sufficiently fit mentally and physically, light reading, sewing, games of draughts, dominoes, and the like, are enjoined, as they serve to occupy the mind of the patient in healthy directions without undue effort, and thereby to relieve any tedium arising out of the treatment.

From what has been said it will be gathered that the special efficacy of the sanatorium method in the treatment of active insanity is due to the action of rest in bed *plus* that of the open air. The *modus operandi* of rest is comparatively simple, and has already been referred to ; that of the open air is more complicated, and herein lies a wide and worthy sphere for the investigator—the pharmaco-dynamics of the fresh air of the open as a remedy for the preservation of health and the cure of disease. The fresh air has an undoubted soothing and soporific influence on the nervous centres, and the cooler outdoor atmosphere stimulates general bodily metabolism and appetite, both of which effects render the open air of special value in the treatment of active insanity. But in the treatment of the insane, and, indeed, of the sick in general, by exposure to the fresh air of the open, we cannot overlook the concomitant operation of such beneficent influences as the soothing action of soft breezes playing over the features, the comforting effect of the pleasant sounds and prospects of Nature and her surroundings, as commonly associated with the life in the open, the cheerful influence of sunshine, the health-giving action of the ozone and oxygen and possibly other gases of the atmosphere, and the more obscure influences of light, sound, electricity, heat and cold or temperature, humidity, atmospheric pressure and the like. Indeed, to arrive at the rationale of open air in the therapy of disease, we must take into consideration the entire gamut of its mechanical, chemical, and physical properties and conditions, as regards the influence of which on the human organism for good or the reverse there is now almost a pressing need for further elucidation.

The great importance of an outdoor life in the management of neurotic and insane patients has long been recognised. Largely, no doubt, owing to our habit of associating health with the outdoor life, and sickness with the bed of sickness and confinement to the sick-room, we have in the past come almost instinctively to regard the open air as the inseparable ally of exercise in the treatment of disease, and consequently in practice to confine its use to those conditions, and to those more or less convalescent stages of disease in which it is considered that exercise is suitable and beneficial. Consequently, before the advent of the open-air cure of pulmonary tubercle, to have removed the sick man on his bed of sickness out from the sanctuary of the sick-



room into the exposure of the open would have been deemed highly incongruous and even reprehensible by profession and public alike. Thanks, however, to the efforts of the pioneers of the open-air treatment of tubercle, which has assumed so great an importance during the past decade, and has been associated with the names of Hermann Brehmer on the continent, and Trudeau in America, though Dr. Philip, of Edinburgh, tells me it was practised by Bodington and M'Cormac in this country at the middle of last century, the recognition of fresh air for its own sake and not merely as the dormant partner of exercise has at last come about, and the open air is now taking its proper place as a potent prophylactic and curative agent at the disposal of the physician, and promises to occupy as important a position in the domain of medicine as Listerism in the realm of surgery; and not even to stop here, with active schemes afloat for open-air schools in London and elsewhere, hedge-schools in Switzerland, and open-air nurseries and *crèches*.

Since the advent of the open-air treatment of pulmonary tubercle, which has now found its way into every well-equipped asylum, doubtless many psychiatrists must have been adopting the open-air principle more freely in the treatment of those actively insane. Apart from a preliminary communication by myself on the sanatorium treatment, contained in the article on insanity in the *Medical Annual* for 1907, the only other contribution on the subject with which I am acquainted is a recent paper entitled "The Open-air Treatment in Psychiatry," (*New York Med. Journ.*, February 9th, 1907) by W. Mabon, Medical Superintendent of Manhattan State Hospital, Ward's Island, New York. According to Mabon, the late Dr. A. E. Macdonald introduced tent life for the tuberculous insane at Ward's Island in 1901, and the late Dr. E. C. Dent extended the open-air treatment to the acute insane about 1904. Mabon has continued the system and in the paper reported gives his experience of it. The tents originally used, owing to obvious disadvantages in wet and stormy weather and the difficulties of proper ventilation, have been largely replaced by wood and glass pavilions termed "camps." These are situated near the permanent reception building, into which it would appear that the worst cases are first admitted and frequently undergo, in delirious and similar cases, treatment by warm packs and the continuous warm bath for a week before being sent to the camps, one of which is

reserved for bed cases. Mabon speaks very favourably of the open-air method as carried out in the camps or pavilions and tents. He obtains a recovery rate of 40 *per cent.*, and has "found the open-air treatment particularly beneficial for the following classes of the insane: (1) The tuberculous; (2) the feeble and untidy; (3) the retarded convalescents; (4) the acute insane, in whom the psychosis is associated with the anæmic blood states, delirium and loss of sleep."

In the sanatorium treatment at Ayr, which is carried out straightway with all new patients, mild and severe cases alike, it will have been seen that the essential feature is the combination of rest in bed and the open air, the rest in bed being quite as important as the open air. It seems strange indeed that the combination of rest in bed and the open air as a distinct therapeutic system has not hitherto been recognised in the treatment of the neuroses and psychoses, in which rest and exercise have each played, and still play, so prominent a part. And yet in one of the latest and best expositions of the rest cure, by Dercum, of Philadelphia (*Cohen's System of Physiologic Therapeutics*, vol. viii, Rebman, London, 1903), emanating from the home and fountain head of the Weir Mitchell treatment, there is from cover to cover no suggestion of a possible alliance between rest in bed and the open air, but throughout an estrangement, the result of the tacit association of open air with the antagonistic though complementary system of exercise. The rest in bed, full rest, or strict rest treatment, which lasts for two, three or more months, is always indoor rest, and is to be followed sooner or later by exercise, exercise indoors, and ultimately exercise in the open air; and this applies to the treatment of neurasthenia, hysteria, hypochondria, melancholia, mania, stupor, confusion, delirium, and other neuroses and psychoses. Thus, speaking of the treatment of melancholia, Dercum says (page 197): "Whenever it is possible, other things being equal, radical rest in bed should be carried out. This rest should always be of many weeks' duration, just as it is in the treatment of neurasthenia. Even in cases of melancholia in which the duration of the disease is of unusual length, say a year or more, the patient should, from time to time, be submitted to periods of rest, these periods alternating, according to circumstances, with other periods of open-air and out-of-door life." . . . Again (page 204): "Even

when the patient is under rigid rest treatment it is a wise plan to allow him to sit up or exercise about the room for a few minutes twice daily." . . . And again (page 205): "Little by little, as the case progresses, the patient should be permitted to get out of bed; little by little passive movements should be added to the massage, and finally, movements with resistance may be instituted. The time out of bed should gradually be increased, and very soon the patient should be permitted to exercise for short periods in the open air."

From the foregoing description of the sanatorium treatment of active insanity as practised at Ayr it will be seen that on physiologic, psychologic, etiologic, and pathologic grounds the combination of rest in bed and the fresh air of the open secures in the most natural way the rest required for the nervous centres during their critical experience in an attack of psychosis or neurosis, and so places the patient in the best conditions for recovery. And here it may be asked, What is the recovery rate by the open-air rest treatment in active insanity, and how does it compare with the results by the exercise and rest methods respectively? I have purposely refrained from giving statistics on such points because of the inherent difficulties and fallacies which beset such investigations, and further, because it is too soon yet to speak definitely as to the recovery rate by the open-air rest treatment. I may, however, state that excluding transfers of all kinds, and including only those patients who had not previously during the existing attack been under treatment as certified insane persons, including the good with the bad, the highly recoverable, and the congenital imbeciles and idiots who came in with the others having become certified as insane for the first time in their lives, I obtained, in the case of 512 patients treated under the exercise system, a recovery rate of 42 *per cent.* (the results being slightly better with women than with men), and in the case of 511 patients treated under the rest system a recovery rate of 44 *per cent.* (the results being slightly better with men than with women). And I must merely content myself meantime with the statement that a trial of the sanatorium system as described in the foregoing has convinced me that it is a more satisfactory method of treatment than either the exercise or the rest method as hitherto practised, and that it should in due time yield even more satisfactory results.

## DISCUSSION

At the Annual Meeting held in London, July 25th, 1907.

The PRESIDENT said that the Association was very much indebted to Dr. Easterbrook for his interesting paper, and those present must have been struck by the efficient way in which he had carried out his ideas regarding sanatorium treatment.

Dr. YELLOWLEES said that the Association was much indebted to Dr. Easterbrook for his practical common-sense contribution. All his hearers would be absolutely agreed as to the value of fresh air to everybody, whether sane or insane. The method of converting his airing-courts into bedrooms had much in its favour, and he had no doubt that in suitable cases it should be tested. The old universal way of allowing excessive exercise in the open air was often bad because it was so apt to be overdone. The swing of the pendulum, he believed, had now gone rather too far in the other direction. There were certainly some cases which did better with exercise in the open air than they did if sent to bed. For instance, a full-blooded able-bodied adolescent he would not put to bed, but would, if possible, set him to dig in the garden. On the other hand, he would like to ask Dr. Easterbrook how the treatment he advocated answered with a case of melancholia. His own experience was that melancholics who had been treated on Weir-Mitchell lines had been injured thereby. In many asylums Dr. Easterbrook's plan would be difficult, because the verandahs were not suitable; but wherever it could be tried it was worth trying.

Dr. WILSON said he was one of those who had the advantage of having seen Dr. Easterbrook's method in practice at Ayr. At that time all who saw it were much struck by the completeness of his arrangements, and by the apparent ease with which they were carried out. He confessed that the doubt to which Dr. Yellowlees had given expression was left on his own mind as to whether Dr. Easterbrook was right in assuming that his method of treatment was suitable for all cases, especially for paranoic and melancholic cases, as well as for the more restless ones. With regard to his own experience he had carried out the treatment almost invariably, but latterly his ideas had modified in two respects, and he would like to hear whether Dr. Easterbrook thought the same. First of all he came to modify the treatment largely in regard to the extent of the isolation. The second modification concerned the amount of exercise. He had been of the opinion of Dr. Yellowlees, and remained so, that the pendulum had swung too far in the opposite direction. He had been in the habit of taking some of his patients out of bed and sending them for a certain amount of exercise during the day, and then putting them back to bed again. He would like to know whether the author had found, as he had himself, that there was a class of patient for whom isolation was bad, and also the class for whom a certain amount of exercise was good.

Dr. D. THOMSON expressed his agreement with Dr. Yellowlees and subsequent speakers when they spoke of the pleasure which Dr. Easterbrook's paper had given them. He agreed that the exercise method of treatment had been overdone, and all his hearers must be aware of the wonderful improvement produced in *anæmia* and chlorosis by simple rest in bed. But he, in common with Dr. Yellowlees, was not at all sure that the rest treatment could not be overdone. The effect of work upon the ordinary hysterical young woman was little short of magical. Cases of melancholia had been mentioned, and he had had cases of hysteria, too, self-centred people, generally in the female sex, who had received all the attention and devotion possible at home. For them there was no treatment like that of the pail and the scrubbing-brush. Women hated exercise, staff and patients alike, airing-court duty as it was formerly called. That was the most distasteful work which they could be set to do. Therefore he would be glad to hear from the author whether his nurses liked that perpetual out-door method, and whether he experienced any difficulty in getting them to undertake it. One striking point which the author brought out was very different from what others had been led to believe in recent years, when he mentioned that the mental improvement immediately preceded the bodily. Surely it was the experience of most of those present that with other methods of treatment, such as indoor rest, the bodily improvement always pre-



ceded the mental. He joined others in thanking Dr. Easterbrook for his paper, which was a very suggestive one.

Dr. Clouston said that he most heartily joined in the thanks which had been expressed in regard to the paper as a whole. On the other hand, he had now lived to see a great many changes, from the nondescript system onwards, and he had become a little more eclectic than he was as a young man. Having had a good deal to do with private patients, with regard to the treatment of whom there was little difficulty in providing a nurse for each patient, one could individualise the patients. Having seen many so-called systems in use he could say that each one of them had some good in it; but he had a note of doubt and criticism when Dr. Easterbrook said he had a system which was applicable to all cases, that other systems had been tried and failed, but that this was the one which produced the greatest amount of good in every case. He had had an opportunity of seeing Dr. Easterbrook's new place and his system carried into effect, and he was greatly instructed and interested. He was certain that for many cases that system was a very good one indeed. But if the author told him that he (Dr. Clouston) had been entirely wrong when he had seen marked improvement when many patients were put upon vigorous exercise, that he had been wrong when he said he had seen a case of melancholia get absolutely well from being put in a quiet workroom and not put in bed, and that he had been wrong when he had seen another case simply sent out to work on the farm get better, then he felt he must beg to differ from Dr. Easterbrook. He agreed with almost all that Dr. Yellowlees had said. That gentleman said he never saw melancholiacs benefited by the Weir-Mitchell treatment. He (Dr. Clouston) thought very many melancholiacs were badly injured by the Weir-Mitchell treatment, but he had also seen cases in which there was a combination of melancholia and neurasthenia very much improved by that treatment. In short, people like Dr. Yellowlees, Dr. Thomson, and himself looked with admiration, with respect, and with great approbation on a man like Dr. Easterbrook coming and telling them about a new system, and thereby laying psychiatry under a special indebtedness to his efforts; but the author must not be offended if they said that they did not believe in its universal applicability.

Dr. GOODALL said that when he was a student at Bethlem Hospital, many years ago, many of the acute cases were allowed on swings and see-saws, and encouraged to take all the exercise they could. The recovery rate was then 50 to 60 *per cent.* He believed that now the reverse order of things prevailed at Bethlem, and, as Dr. Stoddart was present, he would perhaps say whether it were so. He believed they kept acute cases in bed, according to the orthodox view, and he would be glad to hear what was the present recovery rate, as they no doubt had the same sort of cases there as formerly. He had been thinking of instituting a system of continuous baths in an institution to which he had recently been appointed. If the sort of patient under discussion did as well in bed in the open air as in baths, the former plan was very much cheaper and was easier to carry out. He was glad to say that at the institution at which he was now the architects had been enlightened, and had provided verandahs, and the beds of patients could be rolled out from the infirmary wards under them. He understood Dr. Easterbrook to make his recommendations after a year's experience. But the plan deserved more trial than that, and no doubt the author meant to give it. It would be interesting to compare the results with those achieved by prolonged baths. On the Continent it was claimed that all recent cases should be either in bed or in a bath. If Dr. Easterbrook's system proved satisfactory for recent cases, the present too solid asylum fabrics might melt and give place to lighter and much cheaper structures, for no doubt such a system would be beneficial to the chronics and all the members of the staff also.

Dr. STODDART said he was already about to speak when Dr. Goodall rose, and there was now an additional reason since he had asked him some questions. At Bethlem they went in largely for bed treatment, and he believed that the method received a great impetus after he had paid a visit to Professor Kraepelin, at Munich, and found that he kept all his patients in bed for at least a considerable portion of each day. Dr. Easterbrook had received some criticism, under the idea that he believed all cases should be put to bed. But he imagined that the author did not mean that he would put paranoiac (chronic delusional) cases to bed, because they had been practically born what they were, and nothing would alter them. But the manic-

depressive cases, dementia præcox and the exhausted cases certainly seemed to be improved by bed. He had noticed the exhaustion cases especially. They improved up to a point, and they appeared to be well, and accordingly one allowed them to get up. When they did get up and began to walk about, they sank back again, and had to be put back to bed for perhaps a couple of months more. He strongly supported Dr. Easterbrook's contention that bed was the right place and the right treatment. Alienists were apt to err on the wrong side in getting patients up too soon. When a patient appeared to be well it was too soon to get him up; he must still remain in bed each day until at least 12 o'clock. There was some difficulty in keeping maniacal patients in bed. On the Continent, the method was largely employed of using a prolonged bath, and that was sometimes resorted to at Bethlem. The patient was simply put into the bath; there was no restraint, and the man stopped there, an attendant being put with him to encourage him, and there was something for him to do in splashing the water, whereas he would not stop in bed. Dr. Goodall's suggestion of having several baths together was a very good one. He had seen that carried out at Munich, where Professor Kraepelin put four people in baths in the same room, and the patients were very happy together. He saw one jump out of his bath and into the next one, to the evident enjoyment of both patients. With regard to the recovery rate at Bethlem, it had been up to 52 and 53 *per cent.*, and sometimes it had gone as low as 40 *per cent.*, so that he could not say whether there was any improvement with the rest treatment or not. The open air was the proper treatment, and it was much more economical to have the patients in the open.

Dr. HUBERT BOND said that Dr. Easterbrook had given a most stimulating and fascinating paper, and it had given him very great pleasure to listen to it. Had Dr. Easterbrook's time been longer he would have asked him, with some insistence, to go and visit Bexley Asylum. He could there see that his scheme had been largely in practice seven or eight years, both in regard to detached hospitals for recent admissions and the cases in the infirmaries of the main asylum. He was sure the author would see very much there which would interest him. He was in close sympathy with most of what Dr. Easterbrook had said. Just as Dr. Clouston had said, he did not believe in it as a panacea, but he did not suppose that Dr. Easterbrook did either. When it was remembered that every twenty-four hours one drew something like 26,000 breaths, one could not pass over the question as to how many of those were drawn in the open and how many within closed walls. He noticed that the author laid stress on the patients being in the open in daylight hours. When Dr. Stoddart rose he had hoped to hear something from him as to patients being out in the open during the whole of the twenty-four hours, a suggestion that Dr. Hyslop had asked him to join with Bethlem in trying. At the institution he had just left, the Epileptic Colony at Ewell, without any pretence of curative results, he did succeed in improving the condition of many patients immensely, even those who had been in other institutions a long time. He ventured to hope that it might be to some extent the result of his programme, by which almost the whole of the male patients were seven and a half hours in the open air every day of the year, commencing at 7.30 a.m. Dr. Goodall had referred to the question of baths. He supposed most of them had seen the practice which was so prevalent abroad; and if it were proved that there were great value both in the use of the continued bath and in the verandah treatment, there was no reason why baths should not be under the verandahs.

Dr. EASTERBROOK, in reply, thanked the President for his kind remarks about the paper, and the meeting for their kind reception of it. As regards the isolation of cases of melancholia, he carried that out only in the case of noisy patients. He would remind those who were not in sympathy with indoor rest that outdoor rest was quite a different thing, for by carrying out rest in the open air one avoided the disadvantages attaching to indoor rest. The effect of the open air itself was to promote the physical and mental improvement induced by the rest in bed. It was very striking to see how new insane patients treated with open-air rest stayed in bed; he believed it was the effect of rest *plus* the open air. In his experience a certain amount of difficulty in carrying out the treatment with new admissions occurred in only a small number of cases (less than 5 *per cent.*), and was but temporary, these patients soon settling down and becoming contented. This was a striking feature of the verandah treatment of those actively insane. The verandahs

of the reception wards had, as a rule, seven or eight occupied beds, and one nurse in charge was usually sufficient, though other nurses were available if required. It was not intended that the sanatorium treatment was the panacea for all insane persons in all their various morbid phases. But if, for example, a paranoiac was admitted with morbid excitement, he was treated with open-air rest until the excitement subsided, and then allowed to be out of bed. In deciding when the bed stage should cease, one had to consider both the mental and the bodily condition, and specially the more obvious and the finer nervous symptoms of fatigue.

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*Observations on the Treatment of General Paralysis and  
Tabes Dorsalis by Vaccines and Anti-sera.* By W. FORD  
ROBERTSON, M.D., and DOUGLAS MCRAE, M.B., C.M.,  
M.R.C.P.Edin.

THE investigations that have led us to employ specific vaccines and anti-sera in the treatment of general paralysis and tabes dorsalis have been the subject of several previous papers, the last of which formed the basis of a discussion at a meeting of this Association on May 16th. It is necessary, however, to state here in a few words the more immediate reasons which seemed to us some eighteen months ago to justify the undertaking of these experimental observations of therapeutic aim. Prior to their initiation we had definitely ascertained that a threading diphtheroid bacillus, isolated from the brain and the bronchus of a rapidly progressing case of general paralysis, was capable of producing a sub-acute disease in rats, in which the symptoms were distinctly comparable to those of general paralysis, that on *post-mortem* examination of the animals the brain showed the characteristic changes of general paralysis, and that there was also the characteristic invasion by the thread form of the bacillus. It was thus evident that among the various species of diphtheroid organisms that can be isolated from a general paralytic there is at least one capable of producing the disease general paralysis. We had also ascertained numerous facts which harmonised with this view. We had obtained cultures of a diphtheroid bacillus from the brain of the general paralytic in ten out of twenty-four cases; and whilst attempts to cultivate the organism from the blood and cerebro-spinal fluid of the living patient had, as in the experience of most other observers, been in most instances entirely negative, we had succeeded in obtaining pure growths from the blood in four cases and from the cerebro-spinal fluid in two. We had also

ascertained that diphtheroid bacilli, in a more or less advanced state of disintegration, are frequently recognisable in these fluids, even when a culture cannot be obtained, and that such altered bacilli are almost constantly present in the walls of the inflamed vessels of the brain in cases dying in a congestive attack. We had also evidence of the occurrence of a diphtheroid cystitis in all of several cases of tabes dorsalis examined, and of the existence of a high intra-corpuseular bacteriolytic index to certain diphtheroid bacilli on the part of such patients and of general paralytics, which we interpret as denoting that they were defending themselves against the attack of an organism of this kind.

With such and other evidence before us, and as our aim in these researches was entirely a therapeutic one, we felt justified in having recourse to specific vaccine and serum-therapeutic measures. As there was reason to believe that the bacilli with which we were concerned produced their toxic effects chiefly by means of their endo-toxines, we decided in the first instance to prepare an anti-bacterial serum, similar to that which Wasserman prepared with the Klebs-Loeffler bacillus in 1902. After we had begun to immunise sheep, we ascertained, as the result of the application of Gordon's bio-chemical tests to various strains of diphtheroids isolated from cases of general paralysis, and through further experimental observations, that at least one other species of diphtheroid bacillus is often virulent to mice and rats and is capable of causing the symptoms and lesions of general paralysis. We therefore employed both of these two types of bacilli in our therapeutic experiments.

Both have a close morphological resemblance to the Klebs-Loeffler bacillus. The first, which we have designated the *Bacillus paralyticans longus*, differs from the bacillus of acute diphtheria in producing no acid in the control broth in Gordon's bio-chemical tests, in being non-virulent to guinea-pigs, but occasionally virulent to mice and rats, and in forming threads under certain conditions of growth. The second, which we have termed the *Bacillus paralyticans brevis*, is distinguished especially by its bio-chemical reactions; it produces acid abundantly in saccharose and glucose broths, but forms no acid in lactose, salicin, starch, dextrin, glycerine and control broths; it is not virulent to guinea-pigs, but is often very virulent to mice and rats. We believe that these



are not the only species of diphtheroid bacilli that are commonly concerned in the production of the toxæmia of general paralysis and tabes dorsalis, but that, just as in the case of the pathogenic streptococci, numerous different but closely-allied species are capable of exercising a similar pathogenic action.

### *Method of Vaccination.*

The material employed was a suspension of a weighed quantity (10—30 mgr.) of the bacilli in 2.5 c.c. of sterile saline solution heated to 60° C. for fifteen minutes.

The skin of the limb was cleansed by rubbing with a 1 *per cent.* lysol solution and injections of the emulsion were given hypodermically. Local effects varied from the merest induration at the site of puncture to erythema and œdema of the subcutaneous tissues.

The immediate general effects were the production of brief pyrexia, flushing of face, headache and drowsiness, while increase of tremors, ataxia and a return of lightning pains occurred in some cases. Mentally, there were remarkable changes in not a few of the cases.

CASE 1.—Female, a third-stage bed-ridden general paralytic, with contractures and lightning pains of an intensely distressing character. Three injections were given and the pains were increased for a time after each. Three weeks after this she began to make active efforts at dressing herself and walking about with the aid of a chair, and was able to express herself coherently, while the pains seldom recurred. Two months later she was able to scrub floors and go about the wards without support. She was never able to stand erect, however, on account of permanent flexion at the knees. This improvement was maintained for a year, when the patient was removed from the asylum.

CASE 2.—Female, a third-stage general paralytic, very helpless and intensely confused in mind. Three injections gave temperature reactions of over 100° F. each time. Increase of tremors and grosser impairment of speech followed the first inoculation. Shortly after the second the patient talked sensibly and with

clear articulation, and she was able to go about. Two months afterwards she relapsed into her former condition.

CASE 3.—Female, a stuporose general paralytic in second stage. Three inoculations were followed by rises of temperature to over 100° F. and a temporary lucidity in the patient's mental state was noticed.

CASE 4.—Female, a non-progressive general paralytic, the subject of "pains" and "neuralgias," had nausea and vomiting after the first injection and became depressed in mind with exacerbations of pains after the second and third inoculations. Three weeks later she became cheerful and employed herself in housework for the first time since admission twelve months previously. She relapsed, however, several weeks later.

CASE 5.—Female, a depressed and confused tabo-paralytic, became lucid and gave a correct account of her family history after the first inoculation. After two more inoculations she employed herself in the ward, but relapsed after three weeks to her former state.

CASE 6.—Female, was in third stage and bed-ridden for three years, became excited and impulsive a few hours after injection. She developed diarrhœa and had a marked exacerbation of leucorrhœa. No improvement was noticed.

CASE 7.—Female, a confused general paralytic in the second stage, had a return of pains and became flushed after inoculation on three occasions. Her speech, at first more defective, became for a time clearer than formerly.

CASE 8.—Female, an early third-stage general paralytic, became excited and violent after each injection and improved considerably in bodily condition later.

CASE 9 was that of a medical man who had been developing symptoms of tabes for over two years. His reactions to inoculations of the toxins of a diphtheroid bacillus of the "brevis" type, isolated from his bladder, are interesting and significant. The left arm was injected with 10 mgr. of dead bacilli, and the patient in a few hours suffered from distinct malaise and had a definite attack of lightning pains for twenty minutes. These had not troubled him for a fortnight previously. There was no

rise in leucocytes. Pains recurred on the second and third day. Leucocytes remained about 9,000. The second injection of 20 mgr. of bacilli a week later resulted in a rise of temperature to 99° F. at 3 a.m. Next day there was marked local reaction and he had considerable malaise. There was slight recurrence of "pains" and the leucocytes were 16,000. After the third injection he suffered from severe headache and had return of lightning pains for half an hour, about twelve hours from time of inoculation. Next day there was a leucocyte count of 17,000.

On the whole the patient was better and had not the same mental depression that accompanied his ailment prior to inoculations. A fourth injection caused very marked malaise, a temperature of 100.2° F., and once more a return of the pains for a short time. Subsequently he expressed himself as being better in health, much longer free from pains, which, moreover, were considerably diminished in severity.

The results of these observations would seem to show that repeated vaccinations might prove a useful mode of treatment in general paralysis and tabes. This belief is supported by the results of the independent observations of O'Brien in America,<sup>(1)</sup> who has recently reported that he has obtained considerable success by such methods in cases of general paralysis.

That we have not pursued the method further is entirely on account of the fact that our original object was to prepare a specific anti-serum, and we merely temporised with vaccines until the serum was ready for use.

In our opinion such vaccine treatment would have to be carried out under the following three conditions: (1) The bacillus ought to be one isolated from the patient; (2) there should be evidence that it is exercising a pathogenic action upon the patient; and (3) the injections should be carried out under the guidance of the leucocyte count or the opsonic index.

#### *Preparation of the Anti-sera.*

Sheep were selected as most convenient for our purpose, and in March, 1906, two healthy animals were first of all inoculated with dead cultures of bacilli of the *Bacillus paralyticus longus* type, isolated from the brain of a case of general paralysis.

Weighed quantities of the living bacilli were then injected once a week, and the temperature of the sheep was taken twice daily. The inoculations caused a local induration and tenderness at the site of puncture, a rise of temperature of from one to two degrees and a slightly torpid condition of the animal. After two months, as the injections failed to cause any of these phenomena, and as the intra-corporal bacteriolytic index had been raised, it was decided to use the serum. We have now twelve sheep immunised to various strains of virulent diphtheroid organisms, six to the *Bacillus paralyticans longus* type, four to the *brevis* type, and the remaining two animals to both types.

### *Obtaining the Serum.*

The animal is lifted on to a specially contrived stool, the front of the neck shaved and sterilised with 5 per cent lysol and carbolic lotions. A large syringe needle with a bore of 2.2 mm. which has been sterilised in hot oil is grasped by means of special forceps; the thumb of the left hand, enveloped in a carbolic swab, is pressed against the external jugular vein low down in the neck, then the needle is plunged into the distended vessel. The blood is collected in quantities of 40 c.c. in 60 c.c. glass tubes, previously plugged and sterilised in a hot-air chamber. The serum separates out in twenty-four hours to the amount of 20 c.c. in each tube, though it often takes forty-eight hours to reach this quantity. It is now ready for injection, though it may remain in contact with the clot for a month or so, till required.

### *Mode of Administration.*

The sera have been given by hypodermic injection, by the mouth, through the nose, and, in one case, *per rectum*.

For hypodermic injection we use an all-metal serum syringe, which has been thoroughly cleansed in carbolic lotion, and then repeatedly filled and emptied with oil at a temperature of over 160° C., a method employed by Dr. Stenhouse Williams, of the Runcorn Serum-Farm, Liverpool.

The skin of the abdomen is carefully cleansed with 1 per cent. lysol, and the injection is given with not too small a needle (1 mm.). The skin at the site of puncture is pinched before



and after removal of the needle, and held for half-a-minute in order to seal the wound and prevent any escape. A piece of fresh wool is placed on the spot and the fluid is left to be absorbed.

Given by the mouth the serum is quite palatable if some peppermint water or cassia is added. We also administer it by means of an ordinary glass syringe through the nose, passing 10 cc. slowly along each nostril, directing the patient to retain the fluid for a little time before swallowing.

### *Local Effects.*

Given hypodermically, the serum may produce no local effects, or merely a little induration with or without erythema, which in a few cases may spread and give rise to cedema and brawny swelling of a large area of the abdominal subcutaneous tissues. This is readily subdued (in twenty-four to forty-eight hours) by painting the skin with a solution of picric acid. Some cases are more prone to this reaction than others, and it suggests the local formation of toxins by destruction of bacilli in the tissues. It has been found also that friction of the clothing during active exercise is liable to cause a degree of inflammation if the patient is not kept in bed for the day after injection. Serum urticaria occurred in nearly every case.

When the serum was given by the mouth, local effects were manifested by the development of nausea, vomiting and diarrhoea in some cases, and the occurrence of a feeling of hunger in nearly all cases.

### *General Effects.*

These were chiefly drowsiness, diaphoresis, and malaise, whilst polyuria and exacerbation of chronic leucorrhœa were occasionally observed.

Immediately after injection, or in about half-an-hour in oral administration, flushing often occurred; some of the patients complained of being giddy, with a "tight feeling" in the head and a "stiffness of the face." Some experienced temporary loss of vision. In one case the patient was blind in one eye for ten minutes, nearly twenty-four hours after injection. Others asserted they felt as if they were drunk. Vomiting occurred in some

cases after hypodermic injection. Mentally, many of the patients became more confused ; most of them experienced an unusual sense of well-being, and some were hilariously excited. The speech, gait and co-ordination were for a time more impaired, whilst the tremors were increased, and many of the patients complained of shooting pains and sensations of numbness and tingling, or feelings of "pins and needles."

The temperature reaction is characteristic, and so far as our experience goes it is diagnostic. It has for its features a rise to 100° F., or more, when the serum is given hypodermically, and to 99° F., or more, when given by the mouth. This rise occurs within twelve hours and is over in twenty-four, although in the case of mouth administration it may be delayed till the following day.

It has been observed that a temperature reaction may fail to occur if the patient is in a state of remission, when the serum is taken close upon the ingestion of food, or if diarrhœa occurs immediately after its administration by the mouth.

The pulse-rate is usually increased, but on account of its erratic character in cases of general paralysis and other forms of mental disease (well seen in a study of the charts of these cases kept for over a year), no useful data can be obtained.

The serum was tested originally in four cases of general paralysis in the final stage of the disease. In addition to a raising of temperature a few hours after the injection, a remarkable lucidity of mind temporarily supervened in three cases. One patient, who was in a congestive seizure and comatose, became quite conscious two hours after injection of 15 cc. of serum, and the convulsions ceased and did not recur. She remained conscious and lucid up till the time of her death, fifteen days later. Recently another patient admitted to the asylum while in a congestive attack, who rapidly developed coma, became quite lucid within an hour of the administration of the serum. The convulsions persisted, however, and she died in two days, but maintained consciousness to the end.

The therapeutic effects on the mental and motor symptoms of the patients treated can best be illustrated by a short summary of a few cases.

#### *Cases Treated.*

CASE 5.—C. S—, female, æt. 28, married. Admitted in  
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July, 1906, in a confused apathetic mental state, being rather fatuous and facile. There was general muscular enfeeblement with paresis and ataxia of gait, Rombergism, absence of knee-jerks, considerable dysarthria and marked labial and lingual tremors. The pupils were very irregular, unequal and sluggish to light and accommodation.

In August she developed a congestive attack lasting twelve days, during which she had ten severe epileptiform seizures which left her with flaccid paralysis of the right arm and leg for a few days. A month later she had a similar attack lasting two days, during which a leucorrhœal condition was aggravated.

Serum treatment was begun on September 24th, and had the usual effects. In January a sensation of "pins and needles," lasting for twenty minutes, was all that occurred to suggest an abortive congestive attack. In February she had so far improved as to be able to attend the weekly dance. Improvement continued up till the end of April, when it was noticed that six consecutive doses of anti-serum gave no temperature reactions. About this time she became markedly constipated and developed a congestive seizure on May 2nd, which caused a slight paresis of left side of face after twitchings had occurred over both sides of face and in left arm. There was no loss of consciousness, and, being perfectly lucid, the patient was depressed on account of this return of the seizures. On this occasion the temperature, which stood at  $101^{\circ}\text{F.}$ , was raised to  $103^{\circ}\text{F.}$  after 20 c.c. of serum had been given by mouth. Three days later she was out of bed and did a hard day's work at "spring cleaning" with no ill effects.

Her present condition (July, 1907) is one of almost complete lucidity with normal articulation. The pupils react briskly, though they are still unequal and irregular. The facies is almost quite free from amimia and tremors, though the knee-jerks remain absent and the tongue still shows fibrillar twitchings.

CASE 6.—C. M—, female, æt. 48, married. Admitted in June, 1906, with obvious symptoms of general paralysis. She became a confused, amnesic, bed-ridden paralytic who lay huddled up in bed, unable to feed herself or have control of the sphincters.

Serum treatment was begun in September. The usual temperature and other phenomena were observed. Two months later she was up, able to read a book and to converse a little. In January she could knit and do light house-work, recognised her relatives and appreciated their visits. This improvement has been maintained.

CASE 7.—Mrs. S—, female, æt. 24, married. Admitted in September, 1906. Was a bed-ridden, rapidly progressive general paralytic with large bed-sores. The knees were acutely flexed, there were marked tremors, the speech was inarticulate and unintelligible, and there was complete absence of intelligent response.

Injections were begun on September 24th, and were followed by typical and well-marked reactions. Two months later the bed-sores had healed and she was able to get up for a little. Improvement has continued and she is now actively and intelligently employed in the wards. Beyond a slight degree of facility she betrays at present no mental symptoms of her disease, and the motor signs are limited to fixed pupils and abolition of knee-jerks.

CASE 10.—J. H—, female, æt. 48. Intemperate and dissolute for seven years after the death of her husband. Admitted in July, 1906, in a state of excited melancholia with symptoms suggesting peripheral neuritis. Six months later, while in a state of sub-acute mania, she exhibited marked unsteadiness of gait, and leant and lurched to the right side while walking. The articulation became very defective. The pupils were found to be unequal, very irregular in outline, and sluggish, and limited in their movements both to light and accommodation. Early in February she was put under serum treatment and gave typical reactions. The day after the first injection the patient expressed herself in a rational way for the first time since her admission eight months previously. She steadily improved and passed into a state of complete remission and has technically recovered and been discharged from the asylum. On the day she left the following motor symptoms were noted to be present: The pupils were irregular, the right particularly so; both were limited in their range of movement to accommodation, and the right was distinctly sluggish and limited in its response to light; stumbling and



occasional slurring of speech, a slight tendency to lurch to one or other side while walking, and tremors of facial and lingual muscles were also to be observed.

CASE 12.—M. A. H. B—, female, æt. 35, married. Admitted in 1900. A case of dementia with the motor symptoms of general paralysis, which had not cleared up under vigorous anti-syphilitic treatment. She had passed gradually into the third stage, had been bed-ridden, resistive, irritable and absolutely mute for over a year. She was unable to feed herself or attend to the calls of nature, and was extremely emaciated. Serum treatment was begun in February of this year and the usual reactions occurred. Within two months she was able to walk in the garden, could feed herself and had control of the bladder and bowels. She can now express herself coherently, is delighted with her improvement and proud of her ability to do light house-work. She is up and goes about all day, takes an interest in her surroundings and is sociable and amiable.

Time does not permit of a further individual survey of the cases, but we may here summarise the results obtained up to the present.

Altogether thirty-four cases of general paralysis have been subjected to the anti-sera, and all of these have yielded a positive result as regards temperature and other phenomena. Two cases of tabes have also shown similar reactions. With regard to the therapeutic results, out of twelve cases under our own immediate supervision for over a period of three months all have shown remarkable degrees of improvement. Of nine cases treated indirectly by us for a sufficiently long period to obtain therapeutic results, four have improved up to the present, and two have become well enough to leave hospital and to enjoy ordinary social life, and are considered capable of taking care of themselves. The remaining three have become progressively worse in spite of vigorous application of the sera. One of them was in a state of almost complete remission for a time, but relapsed completely while absent from medical supervision.

In the case of the medical man with tabes the employment of an anti-serum prepared with his own particular "diphtheroid" resulted in typical temperature reactions, considerable malaise

and an immediate return of lightning pains at first. He has now been under serum treatment for five months. He is satisfied that the severity of the pains is very greatly diminished, while the duration of the periods of remission is increased, and he no longer experiences unpleasant paræsthetic sensations as formerly. Similar improvement has occurred in another case of tabes of over twelve years' standing, which has been a shorter time under serum treatment. The ataxia in his gait is much less marked. He has regained his facial expression. The pains, which occasionally return about six hours after taking serum, are much less severe, and he has longer periods of freedom from them than he ever had prior to serum treatment.

#### *Control Cases.*

It may here be convenient to refer briefly to eleven cases which were subjected to the anti-sera in order to control our observations in the cases of general paralysis. Three were cases of dementia præcox, four of excited melancholia, two were suffering from alcoholic dementia, one was an epileptic, and another laboured under mania. They all had the anti-sera on at least three occasions, two cases having them as often as eleven and ten times respectively. In none of these did any specific reaction occur after mouth administration, and any rise of temperature subsequent to injection could readily be explained by other factors.

Dr. Alex. Russell, at present assistant physician at Morning-side Asylum, made daily observations over a period of four months on the leucocytes of some of the cases treated by serum. He found that in the cases of general paralysis there was no material change in the numbers of leucocytes, or in the differential counts after injection of the anti-sera; whereas in control cases in most instances there was a decided rise in the number of leucocytes, while the polymorphonuclear percentage showed a tendency to rise.

#### *Control Sera.*

Cases of general paralysis were also subjected to other sera in order to test the specific character of our anti-sera.

Normal serum was obtained from each of the sheep prior to the inoculations with bacilli, and this was injected in doses of

20 c.c. into ten cases of general paralysis on more than one occasion, without the slightest reaction.

Again, nine of the patients were injected each with 10 c.c. of polyvalent anti-streptococcic serum and no reaction traceable to it followed.

The reactions resulting from the use of our anti-sera could not be confounded with "serum disease," since they do not correspond to it, and they occurred only in the general paralytics. Urticaria and occasionally accidental local inflammation at the site of injection were the only reactions common to both the general paralytics and the controls.

In conclusion we would say :

(1) That the anti-sera with which we have been working produce reactions which are diagnostic of general paralysis or tabes dorsalis ; they are probably due to the liberation of endo-toxins.

(2) Cases of these diseases treated with the sera in most instances undergo improvement.

(3) A polyvalent anti-bacterial serum is likely to be more efficacious than either the mono- or bi-valent serum we have hitherto used.

(4) One of the chief obstacles in the way of obtaining a very potent serum has been the loss of virulence in the strains of the organisms used.

(5) There are grounds for believing that an anti-toxic serum would be of use, especially for the immediate treatment of congestive seizures.

(6) Lastly, in view of the presence of dissolving bacilli in the brain of the general paralytic, where in all probability they produce extremely virulent endo-toxins, another aim should be the production of a serum containing chiefly an anti-endo-toxin.

(1) *Journ. Amer. Med. Assoc.*, June 29th, 1907.

#### DISCUSSION,

At the Annual Meeting held in London, July 26th, 1907.

Dr. CLOUSTON said he could speak of the clinical facts, and confirm Dr. McRae's results. He was for a long time a sceptic in regard to the cause of general paralysis. He had run through the various views which were held during the succession of the years, believing first that it was a progressive degeneration, then that it was connected in some way with syphilis, as he believed still, and after very great searchings of heart and observations of cases he came to the conclusion that it undoubtedly was toxæmic in character, and that the toxæmia was bacterial in origin. It was a very striking fact that in every case of general paralysis where

serum was used there was an effect, whereas in the control cases there was no effect. Without being a bacteriologist he knew that was a clinical fact which would require a good deal of explanation to dispose of. He understood Dr. Ford Robertson and Dr. McRae were not in the position of imagining for a moment that they had discovered all about general paralysis, but he believed they were on the track of what might turn out to be a momentous discovery in regard to an extraordinarily difficult disease. There was something dramatic in the very notion that in studying this disease, in regard to which they had been hopeless from the time it was discovered until now, at last a ray of light had risen above the horizon. There was no doubt whatever as to the facts, and all would agree that Dr. Ford Robertson and Dr. McRae had stated their case with manifest honesty, with manifest care not to exceed the facts, and with a manifest feeling of responsibility as to what they were doing. And Dr. Robertson had been working at the subject certainly for five or six years. Clinicians must leave a great part of the subject to bacteriologists to decide. But the matter had a clinical side, and from that side he was satisfied that a definite result had been attained by the serum treatment; and there was every hope that further results would be got by the further researches of Dr. Ford Robertson and Dr. McRae. There were considerable difficulties. It would not only have been dramatic, but miraculous, if they had succeeded at once in curing general paralysis; but if they had established a diagnostic method they had gone far in the study of the disease.

Dr. MICKLE said he had not anything new to say on the subject. Reasoning on the principles of serum therapeutics which had been for some years in vogue, he devised a plan in his own mind, but owing to various causes, including illness, he did not carry out anything in that direction. So he could only say it appeared to him that serum therapeutics on general principles offered what might be expected to be a reasonable ground of amelioration and of cure of that disease when it had not gone too far. To cure an advanced case of general paralysis would be impossible, because the brain and mind effects would remain when once the case had advanced. A portion of brain once gone could not be fed, nourished, or resume its function. He was only raising the question on the general principle of serum therapeutics, which was applied successfully to other diseases.

Dr. GOODALL said he had come for the purpose of hearing the contribution, not to make any comment. He thought he understood Dr. McRae to say that the injection of the serum into some patients who were not general paralytics caused an increase in the polymorphonuclear leucocytes, and he had been wondering what was the cause of that. The conditions described appeared to be remissions, and even if they were prolonged remissions it was a considerable achievement, and something to be thankful for. From the clinical point of view a strong case seemed to have been made out, and he very heartily congratulated them on their careful, conscientious, and honest work.

Dr. DIXON said he had heard that there were thirty or forty varieties of diphtheroid bacilli, and he would like to know whether cultivations of many or several of those had been made. Also, whether any sheep had been immunised to other diphtheroid bacilli than those referred to by the authors of the paper, and, if so, with what results?

Dr. ROWS said he had had the pleasure several times of listening to demonstrations by the authors, and he had been glad to watch the gradual development of their work which had been perceptible in the series of demonstrations. It seemed to him that, in the case not only of general paralysis and tabes, but in the case of various other diseases, they had been too prone to use the word "toxic," and to rest satisfied there. He could appreciate the difficulty of the subject, but as the toxin is of bacterial origin it must be appreciated that there must be some focus in the body where the bacteria giving rise to that toxin were growing and producing that poison. Dr. Ford Robertson had localised that organism in lesions of the body and of the nervous system, and lesions had been found in sections of the spinal cord corresponding to the organ in which the micro-organism was growing. He thought there must be a close connection between the one and the other; and he was very glad that by the production of that anti-serum Dr. Robertson was obtaining a means by which the organism could be attacked in its focus.

Dr. ORR desired to add a word of congratulation to Dr. Robertson and Dr. McRae regarding the results which they had already obtained. Some months ago,



while he was in Edinburgh, the authors gave him the opportunity of observing their cases, and he could endorse everything they had mentioned to-day. There were remissions, and the condition markedly improved; tremors of face, tongue, and limbs decidedly less, and the pupillary symptoms improved also. He wished, however, to point out one thing: that although there was a marked remission in the symptoms it would be exceedingly interesting to observe how long that remission lasted; because, as everyone was aware, remissions in cases of general paralysis were very common events, and sometimes lasted a considerable time. But Dr. Robertson and Dr. McRae would be able to apply that test and compare their results with the natural remissions of general paralysis. Dr. McRae had just stated that he had already sent some cases home. His own short experience was that general paralytics who were sent home in a remission usually returned very quickly, and in a very much worse condition than before. If the authors' cases remained out a considerable time, and did not return in an acutely delirious condition, or in a markedly advanced state, they would have advanced considerable additional proof in support of the idea that the remission was the result of their injections, and that they were on the track of, at any rate, arresting the disease.

Dr. MERCIER said that as he criticised Dr. Ford Robinson's work last time—when he said he thought the verdict to be given was one of “not proven”—it was only graceful that he should take the earliest opportunity of saying that the results which had been brought forward that day rendered it necessary for him to reconsider that opinion. Dr. Orr had spoken about the remissions in general paralysis. Remissions did take place in general paralysis, but complete remissions, so far as he knew, were confined to the very earliest stages of the disease. He had never heard of or seen a complete remission occurring in so advanced a stage of the disease as in some of the cases reported that day by the authors. And he could not regard it as a mere coincidence that even partial remissions should have been in the cases in which injections had been made. That a patient who had attained to so advanced a stage in the disease that he or she had become bedridden, and the knees contracted at an acute angle, that he had large bedsores, and that he should then be so far improved as to get up and walk about, and go out into the garden, and, after being mute for a year to be able to converse, was so extremely unusual that it could scarcely be a coincidence that it occurred in a case in which injection had been given, and it seemed to indicate that a real advance had been made in the treatment of the disease. He wished to say that at once, because hitherto he might have appeared to criticise somewhat ungraciously the very admirable work which Dr. Ford Robertson had been doing, and that he had not appeared to appreciate it at the value that he really did; because when there was a chorus of praise it was natural to men to introduce a discordant note. But he thought they could not resist the evidence which had just been brought forward.

Dr. GOODALL desired to add a word to say that his experience in regard to remissions in the disease did not accord with Dr. Mercier's. He had seen cases in a very advanced stage, in which cellulitis and sloughing had occurred, get up again and be able to play at billiards, and walk about and generally exhibit a remarkable return of motor power. Those cases were, he believed, as advanced as the ones described by the authors, though in saying that he did not wish to detract from the value of their results.

The PRESIDENT said he was sure he spoke not only for himself but for all those who had attended that meeting when he expressed his gratitude to Drs. Ford Robertson and McRae for their valuable work.

Dr. McRAE, in replying on the discussion, said he would like to deal with one or two points which had been raised. With regard to Dr. Mickle's contention as to the selection of advanced cases, it was necessary, in his opinion, to take advanced cases because they must be genuine. If cure were pronounced in an early case the obvious retort would be “the diagnosis was wrong.” It was true that very advanced cases showed, *post-mortem*, such gross changes that regeneration was impossible. On the other hand, he knew it was a mistake to allow themselves to form a judgment emphatically and everlastingly that all those changes were irremovable; because often, in acute insanities, such as puerperal insanity, one found *post-mortem* a degree of chromatolysis which was astonishing; and one saw clinical cases which presumably had as much chromatolysis and yet they recovered. They had no means of knowing for a certainty that the condition

under discussion was incurable. Dr. Goodall had asked why the leucocytes went up in the control cases. If he (Dr. McKrae) might put it reversely he would say the leucocytes did not go up in general paralysis because one was putting some substance into the patient's blood which supplied something to the economy of the leucocytes. On the other hand, in the case of control patients one was putting foreign material into the blood, and presumably the leucocytosis occurred to get rid of it. With regard to Dr. Dixon's wish to know whether he and his colleague had tried other diphtheroids in injecting sheep, he would say they could not go through the group of diphtheroids in the short space of time during which they had been working at them—twelve months. They had been using strains of bacilli which had specific broth reactions, and they had used only bacilli which they had shown by injection or by feeding to be toxic to rats and mice. It had been said that he and his colleague were too ready to diagnose general paralysis at Morningside; but he could say that anyone was welcome to see the cases at any time; there was more than one member of the staff to examine the cases and Dr. Clouston confirmed the diagnosis. Dr. Orr touched on what was, of course, the most important point in the whole matter. Time alone would decide if they were to be successful in pointing out the way to the cure of general paralysis. Dr. Bruce had asked him to say that in the matter of control sera he had confirmed their observations. He kindly gave anti-streptococcus serum, anti-coli serum, and anti-rheumatic serum to cases of general paralysis, and none of them reacted. He wired to him (Dr. McKrae) for a couple of doses of anti-serum, which were sent, and both cases reacted. He felt that Dr. Mercier had dealt most kindly with Dr. Robertson and himself in his criticism. He trusted that the remissions which had occurred in the cases would be prolonged. He was well aware of such remissions occurring, even in so-called advanced cases of general paralysis.

Dr. FORD ROBERTSON, in reply, said he desired to add one word. They certainly wished that their results had been more successful than they were, but, compared with the results of anti-serum treatment outside diphtheria, they showed up very well. The author of a German paper the other day spoke with regret of the small measure of success attending serum treatment outside anti-diphtheritic. They were only yet at the beginning of the anti-serum treatment. There were so many things which there were still grounds for trying, and which they had reason to hope would result in getting a more potent serum, that he thought they would, in future years, revolutionise the anti-serum treatment. He thanked Dr. Mercier for his appreciative remarks, and assured him he took his former criticisms as kindly. He also thanked the President for his kind words, which would be a great encouragement to Dr. McKrae and himself in their future work. He drew attention to the microscopical specimens on the table. In his Morison Lectures they asserted positively that in the brain of the general paralytic, especially dying in a congestive attack, there were dead bacilli, which could not be grown, but which could be seen by means of special staining methods. Formerly they used ordinary staining methods, but now they had a special method, and found that in the *débris* in the cerebro-spinal fluid in a congestive attack there were myriads of dead bacilli. If one took a sheep's immune serum and digested in that some of the bacilli in question they became altered, and had the same appearance as those bodies which could be found in the centrifuged deposit of the cerebro-spinal fluid of the general paralytic. They were finding brains in which those bacilli occurred in enormous numbers. Two were under the microscope. For the demonstration of the dead bacilli the metallic methods were useful. They had their own silver method, which they regarded as an improvement. In the second specimen the platinum method brought them out clearly as diphtheroid bacilli. If stained by the ordinary methods one did not see them, because they were dead and no longer retained the stain.

*The Coagulation Rate of the Blood in Epileptics.* By  
JOHN TURNER, M.B., Assistant Medical Officer, Essex  
County Asylum.

## I.

THE following is an account of a systematic examination of the coagulation rate of the blood of nine female epileptics and seven healthy women.

The great variability in the coagulation rate led me to regard my former somewhat isolated observations (<sup>1</sup>) as by no means conclusive in determining the relationship between coagulation and epileptic fits. It is therefore satisfactory to find that these results confirm my former conclusions, *viz.*, that in epilepsy there is a greater tendency for the blood to coagulate and that this tendency is specially marked about the period of fits.

The nine epileptics, with one exception, were chosen from those who were, or had been, when not under the immediate influence of their attacks, of average intelligence. Two of the cases, although originally in this category, were now demented from the long continuance of their disease. Eight were healthy, one delicate and subject to bronchitis.

In five of the cases observations were made to test the effects on coagulation of bromide of potassium, in three to test the effects of citrates, and in three of a purin-free diet.

The method employed was that of Wright and Paramore (<sup>2</sup>), but instead of taking up two or three samples of blood from different pricks in the calibrated capillary tubes, putting them all into the water heated to 37°C., and taking them out one after another at different intervals to test for coagulation, I have preferred the alternative method mentioned by them of taking one sample at a time, and testing it at *stated* intervals, *e.g.*, the tubes were tested at 105, 120, and 135 seconds, and if one was found to have coagulated at, say, 120 seconds, the following would be tested at 115 seconds, and so on. On account of the variability in the coagulation rate in the same individual, I believe this latter method to be the more accurate.

The method is one which requires considerable practice before one can at all rely on the results, and this is a further reason why I undertook a long series, during which many more than a thousand samples were tested, to see how it would compare with my earlier series.

Whatever may be the defects of the method, I believe the results obtained, although they may not, strictly speaking, represent the coagulation time of the blood within the living subject, will at any rate be comparable, in as much as each blood tested is exposed to similar sources of possible error.

As illustrating the very great variation in coagulation, it may be stated that from three successive pricks in the same individual on different fingers, the blood in both control and epileptic cases often showed a difference in the time of over two minutes, and in all my observations I only on three occasions found the same coagulation rate in the blood from three consecutive pricks.

Buckmaster<sup>(3)</sup> refers to the variability in coagulation rate, and states that he is satisfied that on different days, at the same temperature, it may, in the same individual, vary by at least five to six minutes. The largest variation among my seven control cases was two minutes twenty-five seconds.

The blood is not a simple solution, but contains multitudes of organised elements which in all probability play an important part in the process of coagulation, so that according as different samples contain more or less of these elements, so will the rate be quicker or slower. On account of these variations, to get a true mean I have examined the blood of each of my subjects for at least fourteen consecutive days, taking on each day three samples from three different fingers. The observations were made between 11 a.m. and noon.

The systolic blood-pressure was taken in the sitting posture, with Martin's modification of the Riva-Rocci apparatus.

In the following table is given, both for the seven control cases and the nine epileptics, the average for the fourteen days of the samples which coagulated most quickly and most slowly. Also the average blood-pressure and its greatest variations.

In all the charts the figures at the left hand side in the case of the coagulation observations refer to seconds, in the case of the blood-pressure to mm. of mercury. The continuous line represents the coagulation rate, the broken line the blood-pressure.

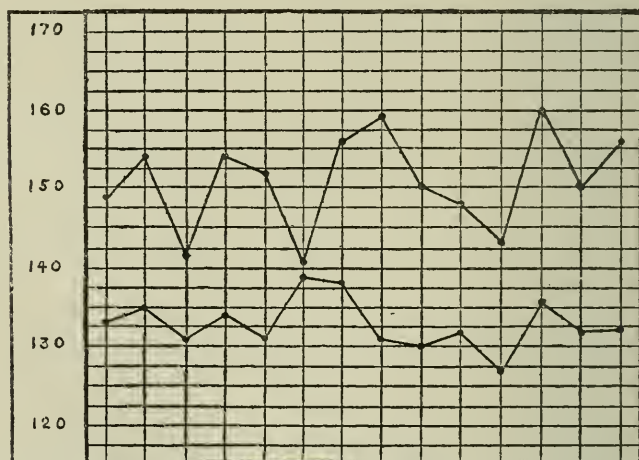


Controls.					Epileptics.				
Coagulation time in seconds.			Systolic blood-pressure in mm.Hg.		Coagulation time in seconds.			Systolic blood-pressure in mm.Hg.	
Average of quickest.	Average of slowest.		Average.	Varying between.	Average of quickest.	Average of slowest.	Average.	Varying between.	
1	146	189	133	148-118	2 <sup>1</sup>	117	160	102	99-111
2	147	178	116	134-105	6	120	160	102	90-115
3	148	181	121	136-104	8	127	165	96	85-105
4	148	199	115	132-105	9	127	155	110	102-122
5	149	180	142	156-125	1	132	162	108	92-120
6	150	178	118	126-110	7	135	170	122	109-144
7	168	204	119	125-108	4	136	170	111	90-123
					5	151	185	117	102-129
					3	153	188	147	125-172
	151					133			

<sup>1</sup> This refers to the average of only nine days.

Three of the control cases were menstruating during the

CHART I.



Showing the mean daily coagulation time in seconds of seven controls (upper line) and seven epileptics (lower line).

period that their blood was being examined; in neither of them did this seem to have any effect on coagulation.

The accompanying chart (No. 1) shows very clearly the greater rapidity of coagulation in the epileptics. On not one

of the fourteen days compared was the average rate in the controls so rapid as the average rate in the epileptics.

Further, the shortest period of coagulation recorded in the controls in nearly 300 observations was 120 seconds, and this only occurred on three occasions (once each in three different nurses).

The shortest period recorded (from the finger) in seven epileptics was 105 seconds, whilst a rate of 120 seconds or less was met with on thirty-three occasions (the number of observations in the epileptics, from which this chart was constructed, being the same as the number in the controls).

## II.

CASE I.—J. A. S—, æt. 27. Her fits date from early childhood; she had, however, passed the sixth standard, and was two years in one situation as a servant and five in another. When free from fits she was a nice-looking, intelligent, well-dispositioned girl, and her mental standard was above the average of her class. From her own account she was at first subject to attacks both of the *grand* and *petit mal* type, but for the last three or four years has had none of the latter. She says that she used to feel worse after the attacks of *petit mal* than after the attacks of *grand mal*. The number and order of fits observed for the, nearly, four months that a record was kept, *viz.*, from December 30th, 1906, to April 15th, 1907, was as follows:

January	5-6	.	.	.	.	.	5 fits.
"	14	.	.	.	.	.	1 fit.
"	31-February 1	.	.	.	.	.	5 fits.
February	15	.	.	.	.	.	1 fit.
"	20	.	.	.	.	.	1 "
"	22-24	.	.	.	.	.	5 fits.
"	28	.	.	.	.	.	2 "
March	6-7	.	.	.	.	.	2 "
"	14	.	.	.	.	.	1 fit.
"	21-22	.	.	.	.	.	2 fits.
April	7-9	.	.	.	.	.	7 "

During this period she had in all thirty-two attacks of *grand mal*—eighteen when up, and fifteen when in bed.

Her bodily health was very good. She had a neurotic palate. From December 30th, 1906, to January 12th, 1907,

daily observations were made on the coagulation rate of the blood, the systolic blood-pressure, and pulse rate. She was not taking, nor had she been taking, any drugs.

The average for the samples which on each day coagulated the quickest was, for the fourteen days, 132 seconds, and for the samples which were longest in coagulating the average was 162 seconds.\*

On January 5th she had four fits, the blood coagulated quickly, and, although not so low as the day following, it should be noted that there was a difference of only five seconds between the slowest and quickest.

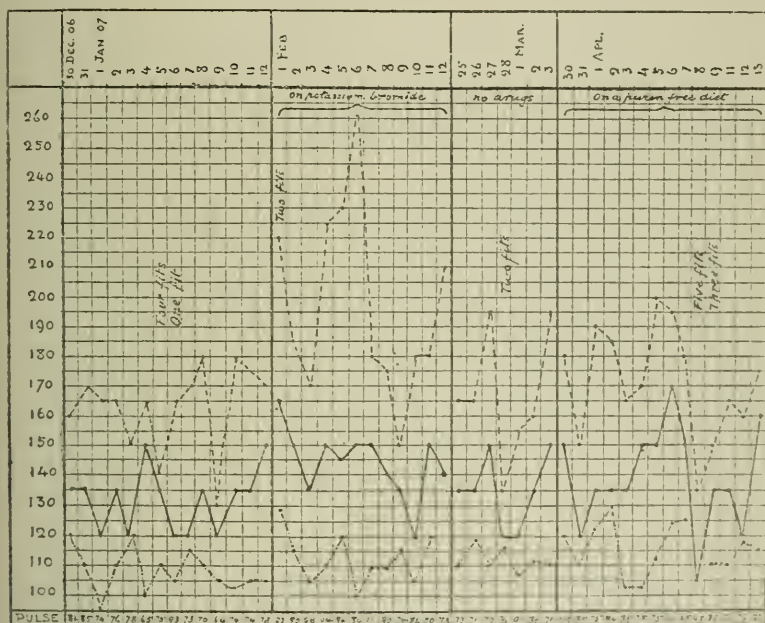
On January 12th she was ordered potassium bromide in half drachm doses three times a day. On the 14th she had a fit, and afterwards was sulky, irritable, depressed, and confused. She had three fits on January 31st, and two on February 1st, and showed profound and prolonged change in disposition. The two following days she appeared like a drunken woman, lying about on the floor with flaccid limbs and dilated pupils, and spoke in a sulky, drowsy way. She then got a little better and was able to do her work, but remained sulky, dull, and sleepy. From February 1st to 12th inclusive her blood was again tested. Coagulation was retarded but not to the same extent as in some of the other cases; the minimum average for the twelve days was 144 seconds. There was much greater variation in the coagulation time of the different samples of each day, so that the maximum average was 196 seconds. On February 12th, as she continued so much worse mentally and bodily, the bromide was discontinued and she soon regained her natural lively disposition and activity. A batch of fits succeeded the discontinuance of the drug (see list). For seven days, from February 25th to March 3rd, her blood was again tested, and the coagulation rate had dropped to its normal figures, *viz.*, minimum average 135 seconds, maximum average 167 seconds. During this period, *viz.*, on February 28th, she had two attacks of *grand mal*, one early in the morning at 1.50 a.m., the other in the evening at 8 p.m. and on that day there was a marked quickening of coagulation (120 seconds) which was maintained the next day, and then gradually became slower.

On March 4th she was put on a purin-free diet, consisting of milk, eggs, cheese, butter, bread and rice pudding, with cab-

\* Hereafter I shall call these two averages the maximum and minimum.

bages when served. She seemed brighter and better on this diet, but there was no marked diminution in the number of fits, although they did not seem to leave her so dazed afterwards. She gained flesh, and was cheerful, active, and rational. Her blood was tested again for the fourteen days ending April 13th (the 10th omitted), and there was no marked retardation in its coagulation; the minimum average was 139 seconds, the maximum 171 seconds. On April 8th it was reported that she

CHART 2.—J. A. S.—.



had had three attacks of *grand mal*, the first at 4.45 a.m., the second at 5.45 a.m., and the third at 6.40 a.m., and whilst her pressure was being taken she shot forward on to the floor, upsetting the apparatus, and had a strong fit. So soon as spasm had ceased her blood was tested; the first sample coagulated in 105 seconds, the shortest time recorded in 141 occasions, the third in 135 seconds.

Her fits are all of this sudden character with no warning. She falls as if shot. Such an absolutely sudden onset appears to me difficult to reconcile with the idea of a toxin circulating



in the blood as the immediate cause, but harmonises with a thrombotic origin. The two ideas are not, however, necessarily antagonistic, for an effect of the toxin may be to render the blood more liable to coagulate, in which case, although not the immediate, it would be a co-efficient cause.

*Blood-pressure* for the first fourteen days (taking no drugs) was on the whole rather low, its average being 108, only reaching 120 mm.Hg. on one occasion, and on one day falling to 95. There was no appreciable effect on the pressure on the days when she had fits, and on January 5th it was taken almost immediately after one. During the period that her pressure was taken whilst on potassium bromide there was on the whole a slight tendency for it to rise. On February 1st the pressure was taken whilst in a fit, before the convulsions had quite ceased. Whilst on a purin-free diet the pressure, contrary to my expectations, showed a slight upward tendency, and on four occasions was above 120.

*Pulse*, as very generally found to be the case in these epileptics, was occasionally irregular. In the first period (no drugs), it varied between 64 and 93, averaging for the fourteen days 76. Whilst on bromide it varied between 70 and 98, averaging 93, dropping to nearly the first average when the drug was left off (79), and whilst on the purin-free diet again slightly quickening, varying between 61 and 109, average 83. On two occasions (January 4th and April 8th) it was counted whilst in a fit, but just after spasm had ceased it was not quickened (75) on one occasion, slightly quickened (99) on the other.

In the chart, the upper dotted line shows the coagulation time of that sample of the three taken daily, which coagulated most slowly. It serves to show the very marked difference found in successive samples of blood. I did not think it necessary to give this maximum period in the other charts.

CASE 2.—F. N—, æt. 32. Her fits date from the age of fifteen or sixteen, and are said to occur generally in the daytime, one or two every week, and to be entirely of the *petit mal* variety. Her eyes become fixed, she changes colour, clenches her teeth, and dribbles saliva. They are over in a few seconds and she never falls.

She was admitted in an acutely melancholic condition, with

a self-inflicted wound on the throat, which she did a week previously because she "felt so miserable." She is a delicate woman subject to bronchitis, and has a very narrow and high palate. Appears to be of quite average intellect, converses rationally and sensibly, and tells me that after her attack she generally feels relieved. Six days after admission had a strong attack of *grand mal*, in which she fell down and bruised her face. So far as can be ascertained this was the first attack of *grand mal* she ever had.

From October 25th to December 1st she was taking  $\frac{1}{2}$  drachm doses of bromide of potassium, three times a day, and during this period she had no attacks whatever, but continued in a very depressed state.

On December 2nd, that is, immediately after a prolonged course of bromide, observations were begun on the coagulability of her blood and blood-pressure. The minimum average for fourteen days was high, 156 seconds. During this period she had no definite attacks of *petit mal*, but merely transitory sensations of fulness across the nose, flickering at the heart, and a "funny" smell (incomplete attacks). On December 16th she was put on 30 gr. doses of citrate of potash, three times a day, and on December 30th the dose was increased to 1 drm. She had, during this time, frequent attacks of *petit mal*. In spite of the drug the coagulability of her blood was markedly quickened, so that for the four days, from December 30th to January 3rd, it averaged only 120 seconds.

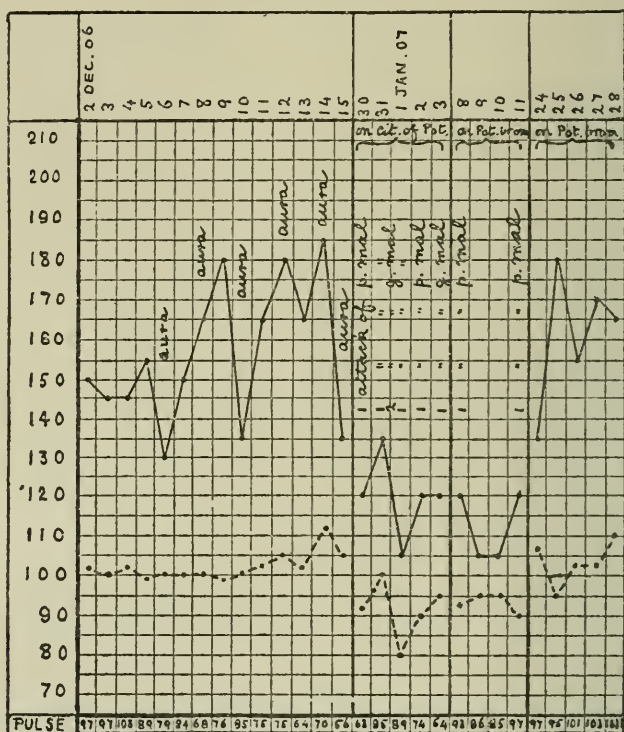
On January 3rd she was again put on bromide of potassium, 30 gr. three times a day, and from this time the attacks were much diminished in number. For the four days ending January 11th her blood was again tested, and still showed a short coagulation time, the average being only 115 seconds. The bromide was continued, and when her blood was again tested for five days, from January 24th to 28th, there was a marked retardation in the coagulation time, the average being 161 seconds.

Her chart shows very strikingly not only that the bromide markedly retards coagulation but also that this effect is lasting. The first fourteen days represent the retarded coagulation, which continued during the whole of this period, though she was not then taking the drug, but had been for a long time previously. Apparently the effects of the drug had worn off by the time the second series of observations were made, for the fits had returned

in their usual, or even greater, frequency, and the coagulation rate was much quicker. I believe that the reason why there was no retardation of coagulation in the third series, after four to five days' administration of bromide, was because her system was not saturated with the drug, for at a later period (fourth series of observations) the retarding effect is again well marked.

Wright and Paramore (<sup>4</sup>) found that by the administration of

CHART 3.—F. N.—.



citric acid, in three cases, it was possible within a week to very materially retard the rate of coagulability of the blood, and to keep it at this lower point for a month, but that after this time, in spite of the continued exhibition of the drug, the coagulation returned to its previous rate.

Hence I quite expected a marked retardation in the coagulation of her blood whilst taking the citrate, and gave it for that purpose. This did not occur; in fact the rate was quickened,

and during this period she was having many attacks of *petit mal*.

List of fits during the time under observation :

1906, December 6. Aura (incomplete attack):

	8.	„		
	10.	„		
	12.	„		
	14.	„		
	16.	2 attacks of	<i>petit mal</i> .	
	17.	2	„ „ „	
	19.	3	„ „ „	
	21.	1 attack	„ „	
	28.	1	„ „ „	
	29.	2 attacks	„ „	
	30.	3	„ „ <i>grand mal</i> .	
1907, January	2.	1 attack	„ <i>petit mal</i> .	
	3.	1	„ „ <i>grand mal</i> .	
	7.	1	„ „ <i>petit mal</i> .	
	11.	1	„ „ „	
	23.	1	„ „ „	
February	7.	1	„ „ „	
	15.	1	„ „ „	
March	4.	1	„ „ „	
	20.	1	„ „ <i>grand mal</i> .	
April	6.	1	„ „ <i>petit mal</i> .	

No further attacks during April.

*Blood-pressure* was low and consistent, varying scarcely at all for the first eleven days. It averaged 102 mm. for the first period. Whilst on citrate of potash it was usually lower, average 92, and again, when fully under the influence of bromide, it returned to its former level, average 103.

*Pulse* was very irregular. Apparently the bromide tended to quicken it, for it gradually slowed down in the first series immediately after a course of bromide, and quickened again in the fourth period when fully under the drug. A similar condition was noticed in the previous case.

CASE 3.—E. S—, a domestic servant. Her fits, entirely of the *petit mal* variety, date from several years previous to her admission here in 1904, when she would have been from nineteen to twenty-three years of age. When first admitted was suffer-



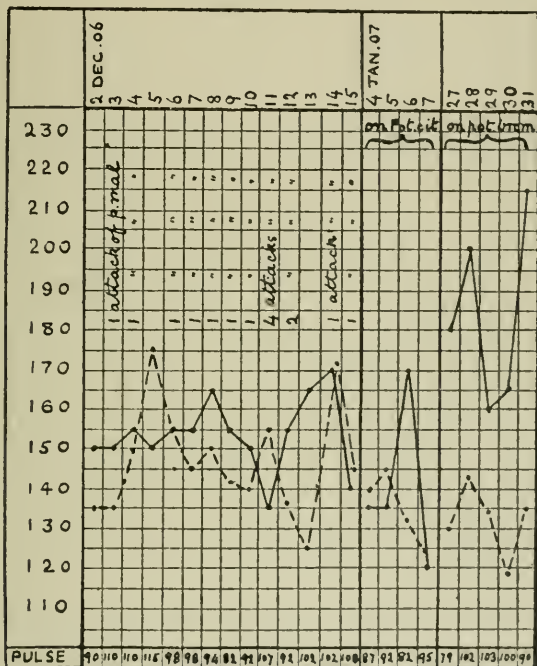
ing from an attack of acute mania with auditory hallucinations; this soon subsided and left her apathetic and lachrymose. She has a typical epileptic disposition, disagreeable, quarrelsome and religious, but is a useful worker in the ward, and of average intelligence. Has a neurotic palate. Has frequent attacks of *petit mal* both day and night. Does not fall, but pulls things about in an aimless fashion, e.g., will pull off the cloth while having dinner. On one occasion she spilled some water on the tablecloth (in an attack) and took soap out of her pocket and began to wash the wet cloth. The following is the description of an attack I witnessed: Said to me, "I feel very funny," and her eyes became fixed; she was laid on the floor by the nurse and there was a very slight, transient tonic spasm (?) of her arms. After a few seconds she began to make clawing movements at her dress, got up in a dazed fashion, picked up several objects from the floor (some imaginary), rolled up some paper and flung it into the fire, and brushed her dress down with her hands. She did not micturate in this attack, although she sometimes does.

At the time that her blood was being examined she was 29 years of age, in good health, and was taking no drugs. It coagulated slowly, the average for fourteen days being 153 seconds. Nearly every day during this period she had at least one attack of *petit mal*. It will be noticed that there was a gradual quickening in the coagulation time from December 8th to 11th, on which day she had the maximum number of attacks (4), and when her blood coagulated in 135 seconds, the quickest recorded for this period.

On December 26th she began taking 40 gr. of potassium citrate three times a day, which, four days later, was raised to a drachm t.d.s. and continued daily until January 7th, 1907. While taking the drug she continued to have her attacks much as usual. On January 4th, 5th, 6th, and 7th her blood was again tested with the anticipation of finding a retardation in its coagulability. This, however, was not found. On no single day was it any higher than it had been when it was tested formerly, and on one day it coagulated in 120 seconds—a shorter period than had hitherto been recorded. The average for the four days was 140 seconds. From January 7th to March 5th she was taking  $\frac{1}{2}$  drm. doses of potassium bromide t.d.s., and whilst taking the drug she had very few attacks of *petit*

*mal* of the usual description, but had frequent hysterical attacks, when she would lie or fall down and scrape her feet up and down on the linoleum and chatter her teeth, without any loss of consciousness. She became very emotional and bad tempered, listless and depressed, unable to do her work and lost her appetite, so that the drug was discontinued. Her

CHART 4.—E. S.—



blood was tested on five days from January 27th to 31st, and as usual the coagulation was retarded, in her case very markedly, the average for these days being 185 seconds.

*Blood-pressure.*—This was the only case out of the nine epileptics examined where the blood-pressure was distinctly high; its average was 147 mm. Hg. There did not seem to be any definite relationship between its variations and the occurrence of the attacks of *petit mal*. Both during the administration of the citrate and bromide of potassium there was a distinct lowering of the pressure.

*Pulse* was regular and quicker than normal. As in the case

of the blood-pressure it did not seem to vary with the attacks. In her case there was not any acceleration of pulse-rate whilst taking the bromide.

List of attacks of *petit mal* whilst under observation (they occurred, with one or two exceptions, whilst she was up) :

1906, December	3 .	.	.	.	1 attack.
"	4 .	.	.	.	1 "
"	6 .	.	.	.	1 "
"	7 .	.	.	.	1 "
"	8 .	.	.	.	1 "
"	9 .	.	.	.	1 "
"	10 .	.	.	.	1 "
"	11 .	.	.	.	4 attacks.
"	12 .	.	.	.	2 "
"	14 .	.	.	.	1 attack.
"	15 .	.	.	.	1 "
"	16 .	.	.	.	1 "
"	19 .	.	.	.	1 "
"	20 .	.	.	.	1 "
"	22 .	.	.	.	1 "
"	23 .	.	.	.	1 "
"	27 .	.	.	.	1 "
"	28 .	.	.	.	1 "
"	30 .	.	.	.	1 "
"	31 .	.	.	.	1 "
1907, January	1 .	.	.	.	2 attacks.
"	10 .	.	.	.	1 attack.
"	17 .	.	.	.	1 "
1907, February	5 .	.	.	.	1 "

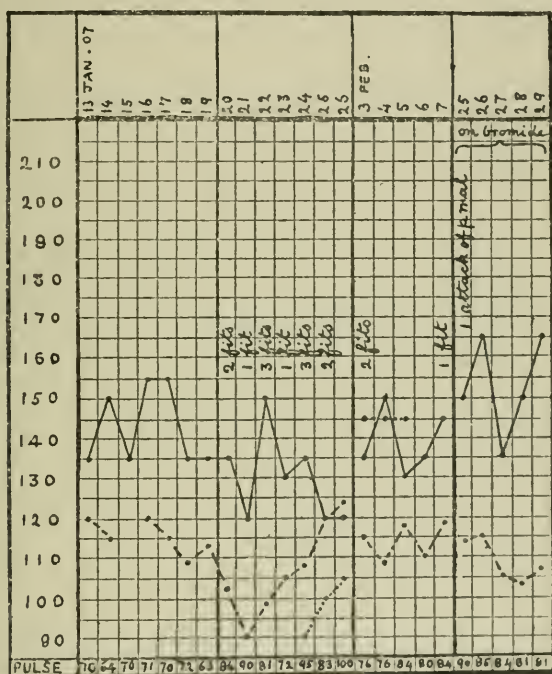
No further attacks to March 5th, when the bromide was discontinued.

CASE 4.—E. L—, was seven years old when she first had a fit. When admitted twelve years ago was in good condition; a nice-looking, bright girl, æt. 17, with a kindly disposition, not at all spiteful; in Standard III. She answered questions readily, but her intelligence was that of an average child of ten or eleven.

Said that she experienced a "funny" sensation in the chest or a buzzing in the head immediately before a fit and then lost consciousness. Said that her fits had been getting worse

lately, and that she felt very silly and lost after them. Neurotic palate. Developed mild chorea from November, 1896, to March, 1897, but this disappeared, and her bodily condition greatly improved on cod-liver oil. In April, 1898, she menstruated for the first time, and during that period had a series of attacks of *grand mal*. The post-epileptic condition was long and severe. She laid on the floor of her room for days in a quite dazed and lost condition. She continued to have series of fits at irregular

CHART 5.—E. L.—.



The dotted line represents the coagulation time of blood from the ear.

intervals of a few months with similar prolonged post-epileptic phenomena. When free from attacks was active, industrious, and bright.

On January 13th, 1907, I began making observations on the coagulability of her blood, her systolic blood-pressure, and pulse-rate. She was then twenty-eight years old. Had not been taking any drugs. Had had no fits for several days. She was in good health; her memory was now considerably impaired for past



events, and she was childish, but of a kind disposition, and very industrious.

Her blood coagulated quickly; for fourteen days the minimum average was 137 seconds, and, compared with most cases, the difference between this average and the maximum was small, *e.g.*, 168 seconds. For the first seven days, during which she had no fits, the average was 143 seconds. During the next seven days (a period of fits) the average fell to 130 seconds.

On January 24th she fell in a strong fit just before her blood was examined. The quickest of the three samples of blood drawn from the fingers coagulated at 135 seconds, but of two samples drawn from the ear, immediately afterwards, the quicker coagulated at 90 seconds (dotted line in the chart). Subsequent examinations of ear blood, when she was free from fits, showed that quicker coagulation was not a constant peculiarity of this region. In the post-epileptic condition the blood was examined on five days; there was a prolongation in the coagulation rate so that the average was now 139 seconds.

On March 13th she was put on potassium bromide  $\frac{1}{2}$  drm., t.d.s., and twelve days later, from 25th to 29th, her blood was again tested and showed, as usual, a considerable retardation in coagulating; the average for these five days was 153 seconds.

List of fits during time under observation :

January	20.	2 attacks	<i>grand mal.</i>
„	21.	1 attack	„
„	22.	3 attacks	„
„	23.	1 attack	„
„	24.	1 „	„
„	25.	2 attacks	„
„	29.	2 „	„
„	31.	2 „	„
February	2.	2 „	„
„	3.	2 „	„
„	7.	1 attack	„
„	9.	2 attacks	„
„	10.	2 „	„
„	11.	4 „	„
„	12.	2 „	„
„	13.	3 „	„
„	14.	2 „	„
„	15.	1 attack	„

February 16.	2 attacks <i>grand mal</i> .
March 11.	1 attack <i>petit mal</i> .
„ 12.	1 „ <i>grand mal</i> (on potassium bromide).
„ 13.	1 attack <i>grand mal</i> .
„ 14.	1 „ „
„ 25.	1 „ <i>petit mal</i> .

The bromide, in her case, seemed to check the fits, but it had a very deteriorating effect on her character. On April 21st (after forty days' administration) she was reported as having "gone quite silly," had no energy, and acted like a person slightly intoxicated, and her whole expression had altered and become vacant. She was still able to do some housework.

*Blood-pressure* (systolic) varied between 123 mm. Hg. and 90, average 111; the lowest readings were during the week in which she was having a number of fits.

*Pulse* generally irregular; when free from fits it was fairly constant, varying between 63 and 72. During the week of fits it varied between 72 and 100, and whilst on bromide it was also slightly quickened, varying between 81 and 90.

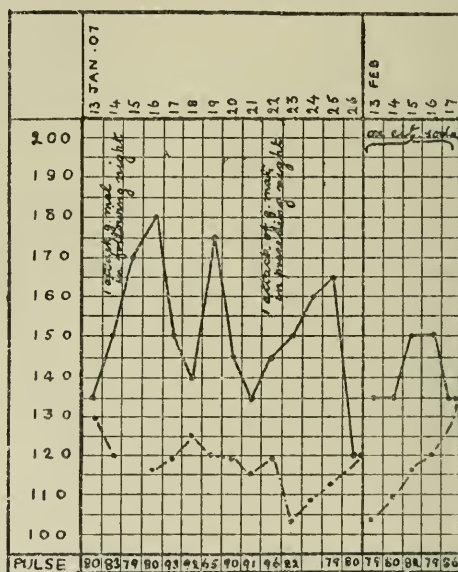
CASE 5.—A. M. L.—, æt. 20, has had fits since six months of age. In fourth standard at school. When admitted in May, 1906, was in a dazed condition and was stated to have recently been acutely maniacal. Tells me that she has not had a fit for three or four weeks, and that now she generally goes a few weeks without any, and that she used to have them more frequently. She is thin but in fair health, and has a neurotic palate. After a few months' residence she was in robust health, very active and industrious, of good disposition, bright and apparently of quite average intelligence. She has an adenoid expression. She now generally has a single attack of *grand mal* about once a month and generally when getting up at 6 a.m. The fits nearly always occur during her menstrual periods.

From January 13th to 26th, 1907, daily observations were made on the coagulability of her blood and her blood-pressure. She had not had any fits for several weeks previously, and was taking no drugs. The rate of coagulation was slow, the minimum average was 151 seconds, the maximum 185 seconds. She had an attack of *grand mal* during the night of the 14th–15th, and on the two previous days her blood coagulated more

quickly than on the two days following the fit, and the difference between the maximum and minimum the day before the fit was very slight (5 seconds). On the 21st the coagulation time was (for her) rapid (135 seconds), and during the night following she had another attack of *grand mal*. On the last day her blood coagulated more quickly than on any other previous occasion (120 seconds); this was not followed by a fit.

She remained free from fits, and on February 2nd was ordered drachm doses of citrate of soda t.d.s., and from

CHART 6.—A. M. L.—



February 13th to 17th her blood was again tested, with the result that no retardation in the coagulation was found, in fact, the average for these five days was slightly below the average of the first period, *viz.*, 141 seconds for the quickest samples, and 174 seconds for the slowest. This is the third case in which I have altogether failed to get any retardation of coagulation after giving a citrate. The following is the list of fits (*grand mal*) which she had whilst under observation :

January 13-14th	.	.	.	1	in the night.
„ 21-22nd	.	.	.	1	„ „ „
February 20th	.	.	.	2	„ „ day.

March 20th	.	.	.	.	2	early in the morning.
April 17th	.	.	.	.	3	(2 during the day and 1 after going to bed).

*Blood-pressure* normal and consistent. The highest recorded whilst not taking drugs was 129 mm. Hg., the lowest 102, average 117. As in the other cases there were no variations on the days following the two fits. Whilst taking the citrate of soda her pressure rose daily from 104 to 140.

*Pulse* was frequently irregular.

This was one of the few cases where there was no general quickening of coagulation, the average being the same as the average of the control cases. Nevertheless there was a decided quickening just prior to attacks of *grand mal*. I am inclined to suspect that one reason for this slowness may have been imperfectly oxygenated blood. The patient had some obstruction in her nasal passage, probably adenoids, and was a mouth-breather, and Sir A. E. Wright has established the fact that excess of carbonic oxide in the blood hinders coagulation. One must also take into consideration the rarity of her attacks—seldom more than one or two in a month.

This latter probably is the more important factor, for in another case recently examined, in which the fits were few, only six or seven in a month, generally during menstruation, the coagulation rate was slow, but was distinctly quicker during periods of fits than at intervening times.

CASE 6.—A. C— was first admitted in 1884, when 20 years of age; a domestic servant; after a short maniacal attack became a useful, active woman, but with a violent temper. Probably of average intelligence for one of her class. Her fits were frequent, both *grand* and *petit mal*, and she was very bewildered after them. Discharged in July, 1889, re-admitted in May, 1890—maniacal. The following month had nearly a hundred fits in forty-eight hours. Remained irritable, passionate but industrious. Again discharged in August, 1891, and re-admitted in June, 1906. Since 1892 has been in the workhouse, her frequent fits preventing her from earning her living. Was melancholic, intelligent, and industrious, except after fits, which she generally has in batches, with frequent attacks of *petit mal*. She says that she feels more stupid and weaker after them than after the attacks of *grand mal*, and

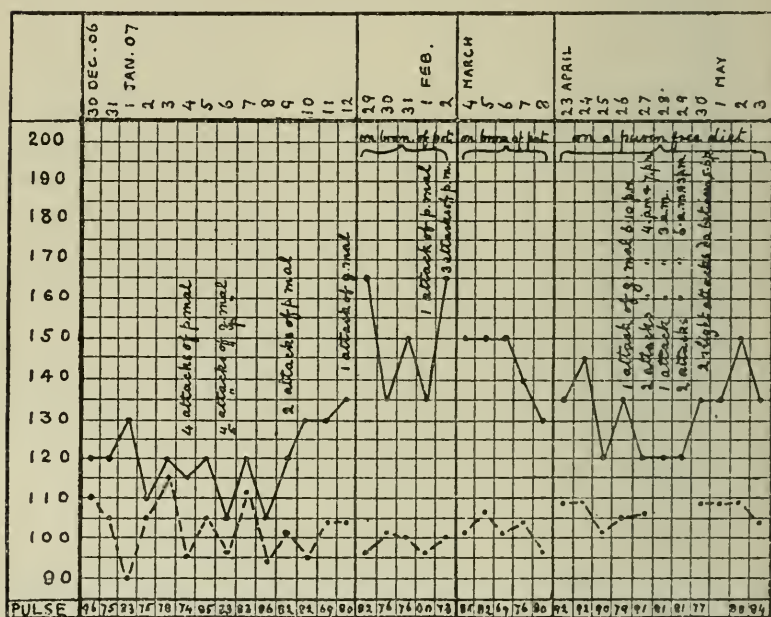


the bad effects last longer. She has sometimes an aura, a feeling of giddiness with double vision, before her attacks. Bodily health fair. Neurotic palate.

On December 30th I began testing the coagulability of her blood and her blood-pressure. She was then in good health, and taking no drugs.

Her blood coagulated quickly, the minimum average for fourteen days being only 120 seconds, the maximum 160 seconds.

CHART 7.—A. C.—.



There was a marked acceleration on January 6th (105 seconds) and during this day she had four attacks of *grand mal* and five of *petit mal*. Two days later her blood again coagulated at 105 seconds, but on this day she did not have any attack. For the five days preceding a period of fits, the coagulation time averaged 120 seconds, for the six days during fits it averaged 114 seconds, and for the three following days, during which period she had only one fit (on the last day), it averaged 131 seconds, showing an increased tendency to coagulate during the time of fits. On January 12th she was put on  $\frac{1}{2}$  drm. doses of bromide of potassium, t.d.s., and from that date until March 8th, when

it was stopped, she had no more attacks of *grand mal*, although her attacks of *petit mal* were just as frequent.

The bromide did not agree with her; it made her listless, drowsy, depressed and unable to do her work. From January 29th to February 2nd her blood was again tested, and there was found to be a marked retardation in its coagulability, the minimum average time for the five days being 150 seconds, the maximum (four occasions only) 199 seconds. A month later it still showed a considerable retardation, the minimum average for five days being 144 seconds, maximum 178 seconds. With the exception of two attacks of *petit mal*, March 14th to 15th, she remained free from fits until April 16th. On that and the two following days she had ten attacks of *grand mal*, and from 26th to 29th inclusive, five attacks. She had been put on a purin-free diet on April 6th. The minimum average coagulation time for a period of eleven days, April 23rd to May 3rd, was 132 seconds, somewhat slower than with ordinary diet, although the fits continued much as before. As usual a period of quickening in coagulation corresponded to a period when she was having fits, followed by a return to a slower rate; this is extremely well shown in the last section of her chart.

The drop is not so marked as in the first chart, from January 6th to 9th, when she was, however, having a greater number of fits (*grand* and *petit mal*).

The following is a list of her attacks whilst under observation from December 1st, 1906, to May 3rd, 1907:

December 4. 4 attacks of *grand mal*.

„ 7. 1 attack „ „

„ 8. 2 attacks „ „

January 4. 4 „ „ *petit mal*.

„ 6. 5 „ „ „

„ 7. 5 „ „ „

„ 12. 1 attack „ *grand mal*

„ 13. 2 attacks „ *petit mal*

„ 20. 1 attack „ „

„ 25. 1 „ „ „

„ 26. 1 „ „ „

„ 27. 3 attacks „ „

February 1. 1 attack „ „

„ 2. 3 attacks „ „

Bromide of  
potassium,  
 $\frac{1}{2}$  drm.  
t.d.s.

February	14.	1 attack of	<i>petit mal.</i>	} Bromide of potassium, $\frac{1}{2}$ drm., t.d.s.
"	19.	1 "	" "	
March	1.	2 attacks	" "	
"	14.	1 attack	" "	} On a purin- free diet.
"	15.	1 "	" "	
April	16.	7 attacks	" <i>grand mal.</i>	
"	17.	1 attack	" "	
"	18.	2 attacks	" "	
"	26.	1 attack	" "	
"	27.	2 attacks	" "	
"	28.	1 attack	" "	
"	29.	2 attacks	" "	
"	30.	2 "	" (slight) "	

No further attacks.

*Blood-pressure.*—For the first period (taking no drugs) varied between 90 and 115, the average being 102 mm. Hg. Whilst on bromide it fell slightly, varying between 96 and 107, the average of 10 days being 100 mm. Hg. Whilst on a purin-free diet it averaged 106. The pressure curve was much more regular whilst taking bromide, and whilst on the special diet than it was during the first period.

*Pulse.*—Frequently irregular. For the first period it varied between 69 and 96, average 81. Whilst taking bromide it varied between 69 and 85, average 78. When on a purin-free diet it varied between 79 and 92, average 85.

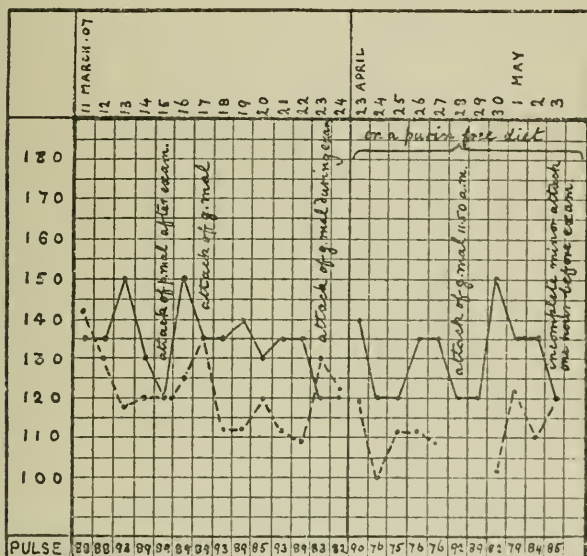
CASE 7.—H. R. S.—has been subject to fits since the age of twenty-three, and, according to her statement (which is borne out by our experience here), they occur chiefly in the day-time, are chiefly of the *grand mal* type, and she rarely has more than two in a day. She has intervals varying from a week to three or four months free from fits. She was in the fifth standard, was in one situation, at £12 a year, for five years, and after leaving that on account of her fits, assisted her sister—a dress-maker. She became melancholic and hypochondriacal and was sent here, where she soon developed into a valuable needle-woman of quite average intellect. She was querulous and spiteful immediately after fits for a short time. Bodily health fair, palate normal.

On March 11th, 1907, I began to test the coagulation rate and pressure of her blood. She was then 34 years old, and had

been taking no drugs. The minimum average time was 135 seconds, maximum 170 seconds.

On March 15th, about ten minutes after her blood was tested, she had an attack of *petit mal*. The coagulation time was rapid, 120 seconds, rising the next day to 150 seconds, but on the 17th, a few hours after an attack of *grand mal*, it again quickened—135 seconds. It kept at much the same level until the 23rd, when, whilst her blood was being tested, she had an attack of *grand mal*, and there was again found to be an

CHART 8.—H. R. S.—.



acceleration in coagulation (120 seconds), which was maintained on the following day.

She was put on purin-free diet on April 6th, and continued to have fits much as usual.

The average rate of coagulation was quicker, minimum 130 seconds, maximum 166 seconds, than when on her ordinary diet. On April 28th, just before an attack of *grand mal*, it fell to its lowest limit and remained at the same level the following day, rising on the 30th to 150 seconds. On May 3rd, an hour before the observations were taken, she had an incomplete minor attack characterised by a "nasty" feeling and

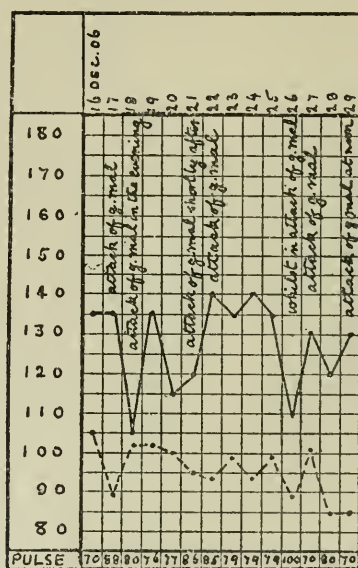


a fluttering at the heart; again there was found to be a quickening in coagulation—120 seconds.

*Blood-pressure.*—For the fourteen days on ordinary diet it varied between 109 and 144, averaging 122 mm. Hg. The curve was very irregular. During the nine occasions it was registered whilst on a purin-free diet it dropped considerably—its average being 110 mm. Hg. and the variations between 122 and 98.

*Pulse.*—Sometimes irregular. There was remarkably little

CHART 9.—J. P.—.



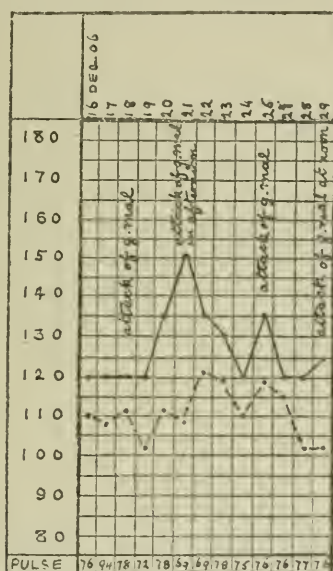
difference in the rate from day to day whilst on ordinary diet, the extreme variations being 82 and 93, the average 88. The daily rate varied more from 75 to 92 whilst on a purin-free diet, and the average was 82 for the eleven days.

CASE 8.—J. P—, æt. 47. Is now demented, the result of long continued epilepsy. Was formerly a weak-minded woman, but capable of being usefully employed. Her fits are of the *grand mal* variety, occur singly, and she has one nearly every day, sometimes missing two or three days. She is in fair health but thin; is taking no drugs.

The coagulation time of her blood is short, the minimum average for fourteen days being only 127 seconds. On December

18th, preceding an attack of *grand mal* at 8 p.m., the coagulation time fell to 105 seconds. On the 20th it was again low—115 seconds, and on the 21st 120 seconds, and about half an hour subsequently she had a fit. There was a considerable retardation in the coagulation for four days in spite of a fit on the 22nd. On the 26th she had a fit from which she had not completely recovered when her blood was tested; coagulation was rapid, occurring in 110 seconds. The next day there was some retardation although she had a fit at 5.20 p.m., and again on the 29th the coagulation remained at the same level although her blood was

CHART 10.—G. J. W.—



tested shortly before another fit. It will be noticed in her chart that the longest period without fits, *viz.*, from 9.30 a.m. on December 22nd to December 25th, coincides with the greatest retardation of coagulation.

*Blood-pressure* was low and somewhat variable. The highest recorded was 105 mm. Hg., the lowest 85, average 96.

*Pulse* was very irregular. It varied between 70 and 88 except on the 26th whilst in a fit, when it was 100.

CASE 9.—G. J. W.— was a domestic servant, *æt.* 23, when admitted, and it was stated that she had only recently

developed epilepsy. Was in an acutely maniacal condition with short remissions for the first ten months after admission, having frequent attacks both of *grand* and *petit mal* (day and night), but the fits were usually worse at the menstrual periods. Subsequently her attacks of excitement got shorter and less frequent, and when free from fits she was an active, industrious, fairly intelligent woman. During periods of fits she generally had a marked trace of albumen in her urine, and developed a transient, bright red petechial eruption on face, chest, and sometimes on arms and legs.

Now her fits are of the *grand mal* type, occurring at intervals of a few days. She is thirty-four years of age, and is in good bodily health, an industrious woman, but irritable, and sometimes violent.

Her blood was examined on thirteen occasions from December 16th to 29th. The average rate of coagulation was quick, only 127 seconds; during this period she had four attacks of *grand mal*, but none, with the exception of the last, occurred immediately before or after the times of examination. Two of the attacks coincided with periods of quickened coagulation, two with periods of slower coagulation.

*Blood-pressure* somewhat low, the average being 110, and varying between 102 and 121.

*Pulse* irregular.

### III.

These observations confirm my previous ones, and show that as compared with persons in good health the blood of epileptics coagulates in a shorter time, and also that this is more marked just before or during fits than when the patient is free from them.<sup>(5)</sup>

Against the supposition that this phenomenon is merely the *result* of fits is the fact that it frequently was found to occur, immediately or several hours, before the onset of one: *e.g.*, in Case 8 the shortest period of coagulation was on December 18th, eight hours before an attack of *grand mal*; again it was rapid on December 21st, half an hour before a fit (120 seconds). In Case 5 the blood from December 19th to 21st showed a progressive quickening in coagulation, which was succeeded by a fit in the night of December 21st. In Case 7, on March 16th,

the quickest coagulation time (120 seconds) occurred ten minutes before an attack of *petit mal*, and on April 28th, a quarter of an hour before an attack of *grand mal*, the same quick rate was recorded.

It must be borne in mind that the tendency to coagulate varies, not only from time to time, but in different parts of the body, so that although the blood from the finger about the time of a fit may not always coagulate with special rapidity, it by no means follows that elsewhere in the body the rate of coagulation is not quicker. This is shown in Case 4: on January 24th, during a fit, whilst the blood from her finger took 135 seconds, the blood from her ear took 90 seconds. Nevertheless, the observations show that in the majority of cases, although blood drawn from the finger at the time of a fit may not represent a sample of that which coagulates most rapidly, there is at these periods an increased tendency to coagulation throughout the whole hæmal system. On six occasions the patients had fits whilst being examined. In every case the rate was relatively quick, in four it was markedly so, in one, although quick, slightly slower than the day before, and the sixth is the case just referred to where blood from the ear was tested.

From my point of view it is not essential, in fact it is highly improbable, that in every case a specially quick rate should correspond to the time of a fit; the reverse of this condition is the more important—that a fit should coincide with a time of rapid coagulation. It does not follow that because the tendency is increased that, therefore, coagulation must occur; what immediately determines this phenomenon is outside the scope of this paper. In my opinion it is in this connection that we have a means of harmonising the thrombotic and the toxic theory of epilepsy, by attributing this idiosyncrasy of the blood to a toxin, which, when it reaches a certain intensity, excites local coagulation. An interesting point which these observations show is that, not only during or before attacks of *grand mal*, but also attacks of *petit mal*, the coagulation rate is quickened; this is shown in Case 3 and especially well in Case 7, where, on March 16th, the rate was 120 seconds—the shortest time recorded in her case—and almost immediately afterwards she had an attack of *petit mal*. On the 22nd the rate was quickened during an attack of *grand mal*, but no more than before the attack of *petit mal*. After the major fit, however,



there was a longer period of quickening; for the next day the rate remained the same.

Bromide of potassium has a retarding effect on coagulation. In all five of the cases tested in this connection this effect was noticed, and it would appear as though it was in those cases where it had the most marked effect in preventing fits that it retarded coagulation to the greatest extent (see Cases 2 and 3), whilst in the case where it had little effect on the fits there was much slighter retardation (Case 1). The two cases (Cases 2 and 6) show that its effect on the blood continues so long as the drug is being taken, but apparently is not manifested until the system is saturated.

Lauder Brunton <sup>(6)</sup> states that Albertoni found when bromide was given for several weeks together to dogs, the excitability of their motor centres was so diminished that it was almost impossible to produce epileptic convulsions by irritation of the cortical substance. Thus it would appear as if bromide acts on both the nervous and vascular systems, not only lowering the excitability of the nerve-cells, and raising their threshold of stimulation, but also retarding the tendency of the blood to coagulate; and from my point of view that the immediate cause of fits is local cortical stasis of thrombotic origin, we should have in this twofold action the explanation of the very beneficial effects of the salt, in diminishing or stopping epileptic fits.

After the administration of citric acid Wright and Paramore found that within a week, and for a further month, coagulation was retarded and then returned to its former level. Although the blood of the three cases to which I administered a citrate was tested within the specified limits, it did not show any retardation in coagulation in a single case, in fact in two (who were however at the time having fits) there was acceleration.

The purin-free diet appeared to have a very slight effect; in one (Case 6) there was some retardation, and it did not in any of the three cases appear to diminish the number of fits. Of course I am only speaking as to its effects on these three cases, and during this somewhat limited period. Both the number of cases and the time under observation were much too limited to arrive at any general conclusion. W. Aldren Turner <sup>(7)</sup>, who instituted a series of observations at the Chalfont Colony, with a view to testing the efficacy of this form of diet in confirmed

epilepsy, found that with it there was a lessening in the severity and frequency of the convulsive seizures, more especially when these occurred in series, but that it had no effect on the minor seizures.

My results, it will be seen, are diametrically opposed to the views of Silvestri (*Gazz. degli. Osped.*, January, 1907), who holds that epilepsy is due to a diminished percentage of calcium salts in the blood, and who quotes some researches of Besta to the effect that in thirty-seven out of forty-five epileptics the blood serum showed a coagulation power inferior to the normal.

*Blood-pressure.*—There is, according to different observers, a very considerable latitude in the range of what constitutes a normal blood-pressure. In my opinion a systolic pressure varying between 110 and 130 mm. Hg. represents very fairly the normal limits. At any rate, although a lower one may be compatible with health, I should regard as suspicious one over 130 mm. Hg., that is to say if it was at all persistent, but an occasional rise of over 130 mm. is very common in persons with an average low tension. According to this standard two of my control cases and one of my epileptics had high pressures, five controls and four epileptics a normal, and four epileptics a low pressure. As epilepsy is so prevalent in imbeciles, and as one of the commonest stigmata of degeneration is a small, ill-developed heart, these results, among that class, are what might have been anticipated. Except that I found in general an extremely irregular curve, not more so, however, than is very commonly the case in insanity in general, and that it was not modified by the number of fits, my results do not coincide with those recently obtained by C. Besta<sup>(8)</sup>, who found the pressure to be raised in 63 *per cent.* of the epileptics he examined.

What relationship is there between the coagulation rate and the blood-pressure? It would naturally be expected that a low pressure would favour rapidity of coagulation and *vice versa*, and broadly speaking, this was found to be the case.

Thus in the seven controls in which the pressure was considerably higher than in the epileptics (with one exception), the coagulation rate was considerably slower. In the one epileptic with high pressure coagulation was slow. But there were many exceptions to the general rule: *e.g.*, among the controls the degree of retardation was not in proportion to the height of blood-pressure, and the case in which coagulation was quickest

had the highest but one blood-pressure, and that in which coagulation was slowest had a relatively low blood-pressure. So with the epileptics, although, as I have just mentioned, the one with the slowest average rate had the highest blood-pressure, the one with the next to slowest average had a pressure only of 117 mm. Hg. Although the epileptic whose blood coagulated in the shortest time (Case 2) had a low pressure, when she was under the influence of bromide her coagulation rate was more retarded than in any other case, without any corresponding rise of blood-pressure. Again, in Case 6, whilst taking bromide the pressure dropped slightly, whilst there was at the same time a marked retardation of coagulation.

Of the five cases to which bromide was administered the blood-pressure fell in three, in two very slightly, in the third considerably (Case 3); in one it rose very slightly. In the fifth the observations were not made at a sufficient time interval from taking the drug to allow of any conclusion being formed. In two cases the curve of pressure was much more regular whilst taking the drug.

In the three cases which were examined whilst on a purin-free diet, there was a slight rise of pressure in two, a fall in one.

*Pulse* in some cases was slightly quickened during or immediately after a fit, in others not modified at all. It was extremely common to get an irregularity in the rhythm, a phenomenon observed at some time or other in all the cases.

The general result of both my series of observations on the coagulability of the blood in epileptics has convinced me that there is a close relationship between rapidity of coagulation and the occurrence of epileptic attacks—a relationship, I believe, of cause and effect—hence a search for a drug which will permanently retard coagulation without having such powerful and deleterious effects on the nervous system as bromide, seems well worth pursuing. I believe that with such a drug at our service we should have a valuable means towards controlling the fits and ameliorating the general condition of many epileptics.

(<sup>1</sup>) *Journal of Mental Science*, January, 1907.—(<sup>2</sup>) *Lancet*, October 14th, 1905.—(<sup>3</sup>) *The Morphology of Normal and Pathological Blood*, London, 1906.—(<sup>4</sup>) *Lancet*, October 14th, 1905.—(<sup>5</sup>) Speaking generally, the greater the frequency of fits in a case, the quicker is the average coagulation rate.—(<sup>6</sup>) *Text-book of Pharmacology*, London, 1885.—(<sup>7</sup>) *Epilepsy*, London, 1907.—(<sup>8</sup>) *Riv. Speriment di Freniat*, vol. xxxii; abstract in *Journal of Mental Science*, April, 1907.

*The Inference of Local Degeneracy from a Comparison of the Vital Statistics of the People* (<sup>1</sup>). By C. S. MORRISON, L.R.C.P., Medical Superintendent, County and City Asylum, Hereford.

PUBLIC opinion of late days has been very forcibly directed to the question of degeneracy, and in this county the increase of the insane, with a decreasing population, has long been awaiting some attempt at an inquiry and elucidation. I propose, therefore, to briefly place before you a few facts, supported by statistical figures, which represent some of the many facets of this highly complicated question.

In industrial and social evolution, as with all evolution affecting matter and form, the trend of development is to proceed along lines of least resistance. The stress of necessity brings into active operation latent forces which finally overmaster the resistance and allow other forces in their turn to become effective. The desire for a larger holding of corn gave this country free trade, but it was largely the means of reducing the area of its cornfields and of shifting the balance of its population from the land into cities.

The corn harvest from "free trade" and the shrinkage of agriculture is but the industrial picture of that law which ordains that the simpler economy cannot develop into the more complex without casting aside the elements of simplicity in the parent.

The inherent weakness of the simpler is also here made manifest by the power with which the more highly organised forces of political and social economy have devised means to secure and maintain the higher life of a people and build up their national assets.

In time it also tends to transform the national life, and as this life rises higher in the plane of ethical, social and material standards the organic forces by which the changes have been created for ever keep changing and advancing, to support the ideals generated from the older and simpler forms.

The outcome of complex operations, as we know, serve more fully and profitably the wants of a complex organism, such as our national life has become, but it may starve the weaker



representatives of the same organism in effecting salutary changes.

Agriculture is no longer made the standard of our civilisation. It is sometimes referred to as its supplement. The hum of the wheel, the thud of the engine, the laboratory of the chemist, and the glow of blast furnaces have each and severally supplanted, in their own way, the work and labour of the guileless ploughman, the effort of the expectant sower, and the hopeful anticipation of the reaper.

The accumulated prosperity of the nation, except as its ornamental pendant, is no longer summarised in the possession of herds, the extent of broad pastures, or the acreage of corn-fields, but by the number of its factories, the extent of its coal measures and other mineral wealth, and the area of inhabited houses.

Yet the factory and the workshop are but the differentiated and developed outcomes of the labourer and the husbandman in the fields. This change has also removed the balance of population and the balance of prosperity from the land into cities, and has created problems of a social, moral and economic order of its own, and resembling in many others the problems attaching to the land and its agricultural community. The latter, in a sense, is linked by a long chain to the former, and towed in its wake as a sub-continent. In short, the advance of science and free trade has led away from the land the more competent, physically strong, and mentally balanced labourer towards the factory and workshop, and has left behind the relatively less fit, both physically and mentally, to populate and work the land.

The "decadent" is seen in rural areas and agricultural communities in clearer perspective when viewed in the light of vital statistics. Here, as elsewhere, life is ordered not logically but psychologically, and the brain, as the central battery of its intrinsic constitutional energy, orders and shapes the functions of life. It is *the* seed from which the plant "success" is grown, and the fertility of the soil and the vigour of the plant determine the measure and quality of the success it will achieve.

The standard by which the nation gauges its political and industrial success is measured by the Chancellor of the Exchequer in his financial budget. The standard of national success in health—moral and physical—is measured in the

budget of the Registrar-General, and therein we find the balance or deficit in terms of vital statistics. It is to the question of these vital statistics that I desire to draw your attention as one of fundamental importance to the mental and physical health of the people of this county, which represents, perhaps better than any other in England and Wales, a typical agricultural community, burdened with many economic problems pressing for solution and awaiting the discovery of a remedy to deal with the malady of rural depletion.

*Physical features of Herefordshire.*—Nature in her bounty has done all she could to enhance its fertility, to beautify its landscape and bring health and prosperity to its people. The soil has derived its characteristic richness and fertility from the disintegration of red marls and limestone. A plenitude of rivers and brooks trace their sinuous outlines along extended cornfields, teeming orchards and expansive meadow lands, while valuable timber skirts their courses and the heights above.

It is stated that the agricultural produce of Herefordshire is of a more general character than that of almost any other county. It has been famed for its cider and perry for centuries past. Sheep farming has been prosperous with its breed of Ryelands, and the outstanding speciality of the county has for long years been its cattle. Speed, in his history of this county published in 1610, says: "This countys climate is most healthful and temperate and soyle so fertile for corn and cattle that no place in England yieldeth more or better conditioned." The longevity of the people is proverbial—the story of a Morris dance performed by five old couples in the presence of James I whose combined ages amounted to over 1000 years is a historic legend of the county.

*Population.*—From Chart I it will be seen that the population of the county at each recurring census since 1801 has shown a steady increase, reaching in 1861 an increment of 7·1 *per cent.* and falling to 1·4 *per cent.* in the following decennium.

From 1871 forward it will be noted that the small increase above shown actually decreased by 3·3 *per cent.* in 1881, and again in 1891 and 1901 showed a further decrease of 4·4 and 1·4 *per cent.* respectively for each of those census years. The decrease in the enumerated population of 1901 and *pro rata* decrease up to 1905 compared with that of 1871 only amounts

to 12,422, a number which on the surface appears inconsiderable and from which no issues of a serious character could be deducted. What, however, is of greater relative importance than the mere decrease in the enumerated population is the number which contributed to the decrease by migration. When we add the difference between birth and death rates in each intercensal period commencing about the latter half of the last century, and the several enumerated decreases at each subsequent census, we get the large total of 90,000 persons who have emigrated. This decrease by migration is not equally spread over each decennium, but probably the largest was recorded between the years 1861 and 1881.

CHART I.—*Total Estimated Population of Herefordshire at each Successive Census, with an Increase or Decrease indicated in Margin per 100 of Population.*

Year.	Population.	Increase + Decrease -
1801 . . .	88,436 . . .	—
1811 . . .	93,526 . . .	+ 5'7
1821 . . .	102,669 . . .	+ 9'7
1831 . . .	110,617 . . .	+ 7'7
1841 . . .	113,272 . . .	+ 2'4
1851 . . .	115,489 . . .	+ 1'9
1861 . . .	123,712 . . .	+ 7'1
1871 . . .	125,370 . . .	+ 1'4
1881 . . .	121,249 . . .	- 3'3
1891 . . .	115,949 . . .	- 4'4
1901 . . .	114,380 . . .	- 1'4
1906 . . .	112,948 (Estimated)	- 1'2

The character of the migrating population will be readily admitted to have been adults, strong, self-reliant, and with a greater capacity to cope with the changed complex of our social economy, introduced by the advancement of science and the use of machinery.

Comparing the character of the emigrant with that of the left-behind, one is compelled to recognise the possession in the former of a larger degree of independence, courage, zeal, and a spirit of adventure. The stay-at-home, on the contrary, by comparison is a person of inertia and apathy and gifted with a lesser capacity for sustained effort. We know every intelligent effort is educative, and concerted effort is the lever that moves mountains. A people unequal to making this effort must have inherent adaptive deficiencies, and their weakness must be gain-

ing in every succeeding generation fresh momentum which will mirror itself in vital statistics.

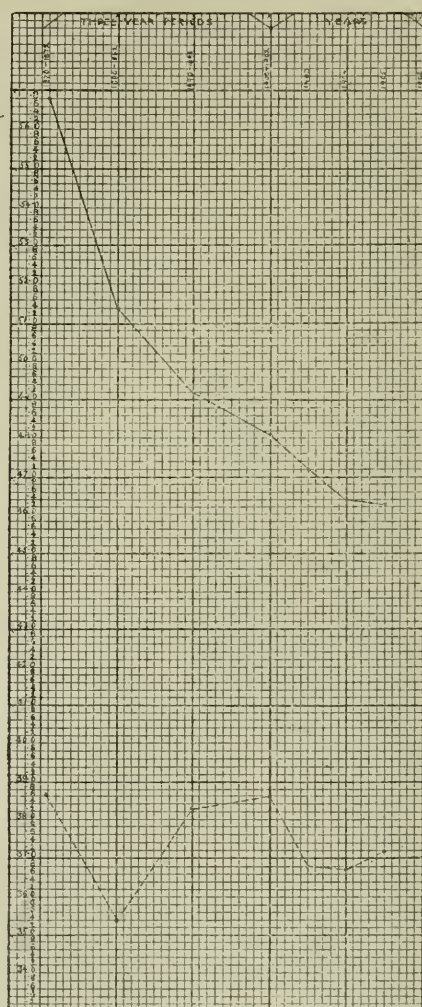
*Marriage rate.*—The position of Herefordshire in this matter I consider unique. Whereas all counties in England and Wales except four show a decrease in the average for thirty years, Herefordshire alone remains stationary. This is shown in Chart II. The construction I am inclined to put on the circumstance is this: that none of the reasons which are recognised, or at least assigned to operate more or less among other industrial, educated and leisured classes, severely exercised a prohibiting influence on the marriageable population of this county. Further, that the persons themselves were content with a lower standard of living and had in a lesser degree the sense of responsibility in the upbringing of their family. This may also partly account for the well-known fact of Herefordshire having the highest rate of pauperism in England and Wales. The decrease in the marriage rate for England and Wales is shown to be 14·9 *per cent.* as against an unaltered rate for Herefordshire as shown in the Chart.

*Birth rate (legitimate).*—Before considering the actual figures I would draw attention to the very important table shown in the *Registrar-General's Sixty-eighth Annual Report*, in which he embodies an analysis of the fertility of married women in urban and rural areas. He states that it might be inferred from the table showing "Mean Annual Fertility Rate of Married Women, per 1,000," that in urban areas it is greater than in rural areas, but this is disproved when the fertility of married women is considered and compared at similar age constitutions for urban and rural areas. The converse, therefore, holds good, particularly at ages ranging from thirty-five to forty-five years. Speaking generally, the fertility of women at conceptive ages, *viz.*, fifteen to forty-five years, living in the country is from 8 to 11 *per cent.* greater than that of women living in towns, and the comparatively greater fertility in rural districts is not due to differences in the proportion of married women. Further, the greater fertility in rural districts would be much more enhanced if the age constitution of the married women in the two areas were nearly alike. But the continuous migration of young persons from rural to industrial areas has considerably depleted the normal proportion of young married women in the rural districts. In England and Wales the



legitimate birth rate has fallen from 292.5 per 1,000 of married women in 1870 to 223 per 1000 in 1905. In Herefordshire for

CHART II.—Mean Annual Marriage Rates per 1000 of the Unmarried and Widowed Population at. 15 and upwards.

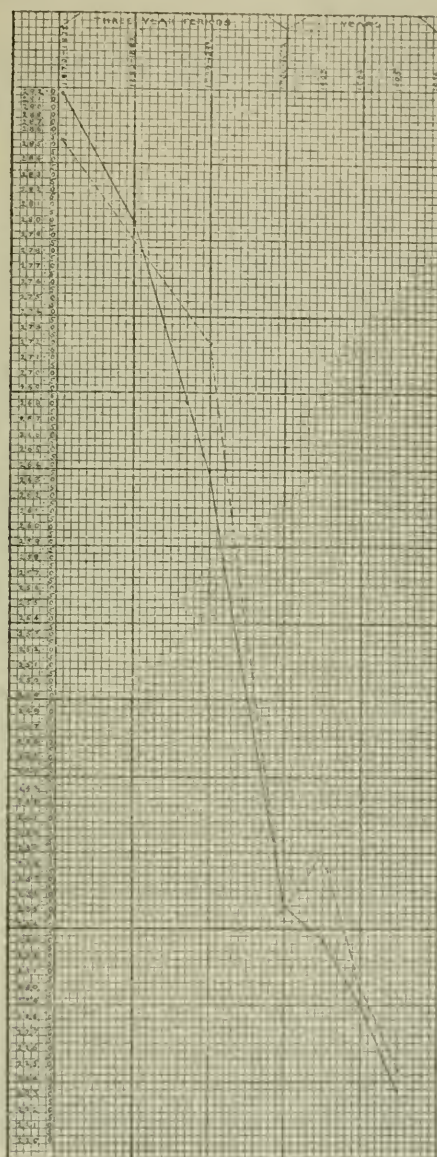


Decrease per cent. in 30 years, 1870-72 to 1900-02, England and Wales, 14.9. Black line.

During 30 years, 1870-72 to 1900-02, in Herefordshire the rate was stationary. Herefordshire, dotted line.

the same periods the legitimate birth rate has fallen from 285.5 to 223.5, showing that the fertility rate of Herefordshire as a rural area is considerably below what is the normal rate for all rural areas. The assigned causes for the national decrease in

CHART III.—*Mean Annual Fertility Rates of Married Women (Legitimate Births) per 1000 Married Women at. 15-45.*



Decrease *per cent.* in 30 years, 1870-72 1900-02, England and Wales, 19'5, black line;  
Herefordshire, 17'7, dotted line.

CHART III (continued).—Mean Annual Illegitimate Birth Rates, 1870-1905. *Illegitimate Births to 1000 Unmarried and Widowed Females, æt. 15-45.*

	1870-72.	1880-82.	1890-92.	1900-02.	1903.	1904.	1905.
	Three year periods.				Years.		
England and Wales .	17'0	14'1	10'5	8'5	8'4	8'4	8'2
Herefordshire .	21'4	19'0	13'4	11'2	11'8	11'3	11'4

the birth rate, *viz.*, greater luxury, changes in the social and economic conditions of the people, and deliberate restriction of child-bearing, can not be made to apply, except in a very limited measure, to Herefordshire as a rural area.

The decrease must have, therefore, as a cause a strong endogenous basis in the persons themselves. England and Wales in thirty years shows a decrease of 19'5 *per cent.* in the legitimate birth rate, whereas Herefordshire 17'7 *per cent.*, thus showing a very small difference where a much larger in favour of Hereford was to be expected (*vide* Chart III).

*Infantile mortality* (Chart IV).—Closely connected with birth rates is infantile mortality, and this interdependence, as you are aware, has lately received much public attention. The special features to be remembered with regard to Herefordshire are the following:

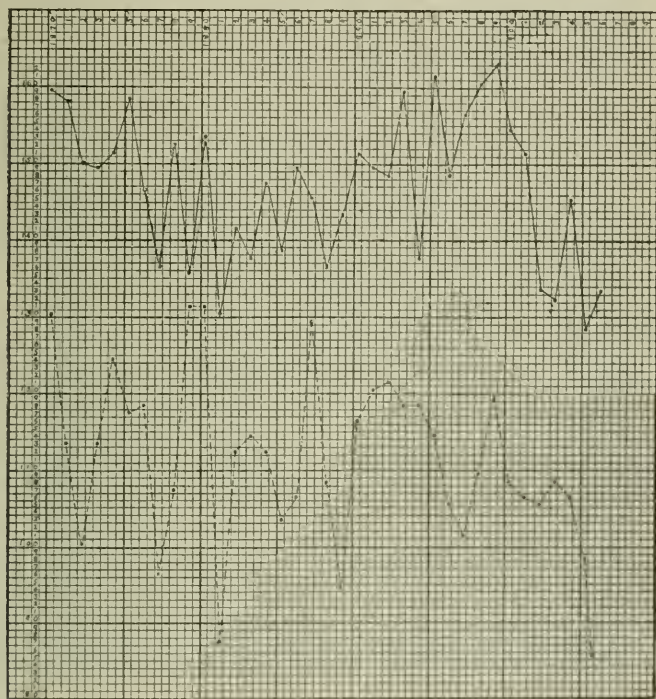
- (1) Enormous migration of the adult population ;
- (2) An unaltered marriage rate ;
- (3) A decreased fertility rate for a rural area ; and
- (4) A continuously diminishing infantile mortality.

In reference to the decreasing infantile mortality of this county I would observe that the Commissioners in Lunacy for Scotland, by an analysis of the figures for the census year 1901, found that the greatest number of congenitally deficient persons received into the district asylums of Scotland came from rural areas with the lowest infantile death rate. In Herefordshire it has fallen from 131 per 1,000 births in 1870 to 85 in 1905, and for England and Wales for a similar period the infantile death rate under one year per 1,000 births has fallen from 159 to 133 as against Herefordshire, 85. To place another graphic picture of child mortality at ages between 1-5 years per 1,000 children born, I quote the figures of the Registrar-General for the fifth year of age for 1895-1900. For England and Wales 774 survived per 1,000 children born, and for Here-

fordshire 858, Westmoreland alone being represented with a higher survival rate of 861.

How are we to account for the difference in the two death rates? I need not say that although the enormous sanitary improvements introduced in the domain of public health have materially reduced infantile mortality in all areas, they alone cannot account for this great difference in the infantile mortality

CHART IV.—*Infantile Mortality under  $\alpha$ . 1 to 1000 Births (1870-1905).*



England and Wales, black line ; Herefordshire, dotted line.

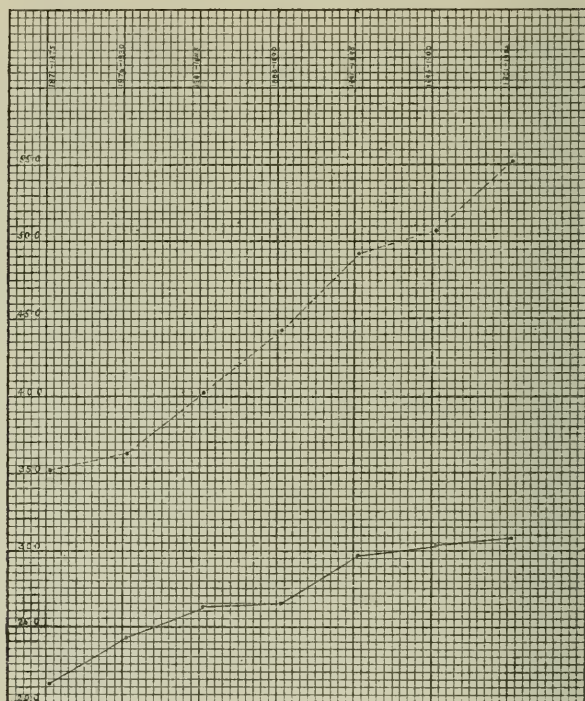
between industrial and agricultural areas. The problem becomes more entangled when we remember that at similar age constitutions the fertility of rural areas is greater than that of urban areas, and really should show a higher mortality rate. A higher birth rate is generally associated elsewhere with a higher mortality rate, but it may be partly from having a younger age constitution. Is it the only physiological explanation that can be given? Can the under-developed neuron of the rural child



be associated with greater phagocytic protection? Does the opsonic index of the rural and urban child vary? And if it varies, within what limits does this difference show itself, and at what age-periods is it most marked? The subject is sufficiently interesting to merit an inquiry.

*Admissions into asylum.*—You will observe in Chart V (i) the

CHART V (i).—*Ratio of Insane Pauper Patients per 10,000 of Population, 1871-1905, in Quinquennial Periods.*



England and Wales, black line; Herefordshire, dotted line.

enormous difference there has been in the ratio of persons of unsound mind in Herefordshire as compared with England and Wales. In Herefordshire it has risen from 35 per 10,000 population in 1871 to 55 in 1905, compared with 21 and 32 for England and Wales for the same periods, showing in actual numbers an accumulated increase for Herefordshire from 436.0 in 1871 to 630.2 in 1905.

I am indebted to the clerk of this asylum for figuring out

the difference in actual costs on lunatics maintained in Herefordshire on the ratio of our asylum population, and what it would have been if the ratio had been no higher than that of England and Wales for the years 1871-1905. Assuming the average maintenance cost in this asylum to be *gs.* per week for the whole period, Herefordshire would have saved £134,295 if the proportion of lunacy had been no higher in this county than represented in the general population of England and Wales. If this figure is even approximately correct it would appear that one way of keeping down lunacy and its cost would be for the county to start profitable industries which would reduce migration of the adult population and indirectly help to keep down the rates.

CHART V (ii).—*Mean Annual Rate of Admissions into the Hereford Asylum (Pauper Patients) 1871-1905, shown in Quinquennial Periods; also the Ratio of Admissions per 10,000 of the Population (Herefordshire) for the same period, together with Mean Annual Numbers of Total Notified Pauper Lunatics.*

Years.	Mean annual admissions.	Rates of mean annual admissions to 10,000 of population.	Mean annual numbers chargeable to Herefordshire.
1871-1875 . .	60.25 . .	4.8 . .	436.0
1876-1880 . .	67.8 . .	5.4 . .	458.6
1881-1885 . .	68.8 . .	5.6 . .	487.8
1886-1890 . .	63.8 . .	5.2 . .	537.0
1891-1895 . .	81.4 . .	7.0 . .	566.2
1896-1900 . .	73.8 . .	6.3 . .	585.6
* 1901-1905 . .	82.0 . .	7.2 . .	630.2

\* Excluding boarded-out patients returned.

*Thyroid insufficiency.*—Lastly, I wish to draw your attention to the increased prevalence of thyroid disease in persons admitted into this asylum within recent years, as compared with the number observed to be so suffering ten or twelve years back.

From records available I find that the number has risen from 2.5 *per cent.* of the admissions during the decennium 1886-1895 to 10.5 *per cent.* during the decennium 1896-1905, and last year we admitted 3.7 *per cent.* males and 33.5 *per cent.* females with goitre. Allowing for any personal equation and any fuller observation made in the last decennium, the increase is sufficiently striking to be recorded, and has, I think, an important bearing on the issues of degeneracy shortly commented on in this paper. When we remember that thyroid insufficiency is

associated with cretinism and myxœdematous insanity at one end of its evil chain, and an enormous number of minor mental and nervous retrogressions at the other, the evidence that thyroid disease is more prevalent in a community than it used to be becomes one of serious import. It comes as a stranger within the gates we should like to eject !

Competent observers have maintained "that the results of imperfect development or of disease of the glands before completed adolescence is to arrest absolutely the growth and functions of the nervous system at the age of supervention of the gland affection."

Some authorities go so far as to consider that one of the functions of the thyroid secretion is to keep the body free from harmful organisms and their toxins. Be that as it may, if the thyroid and para-thyroid bodies play such an important part in the production of abnormal nervous phenomena, and is so necessary to the bodily economy, the stigmata of goitre is but one more link in the chain of convicting evidence.

Without troubling you further with statistics I may say there is a decrease in the number admitted into the asylum whose mental unsoundness was of an acquired character, and an increase in the number of those congenitally deficient. The features of vital statistics distinguishing this county (Herefordshire) is common, I may say, to all agricultural areas, modified by the circumstance of their having more or less the conditions exclusively appertaining to urban or populous areas.

I think I have trespassed on your patience and forbearance sufficiently without quoting the statistics of these counties. My excuse for doing so is the importance the question of lunacy in this county has acquired with a decreasing population, and further, that your presence to-day has provided me with an excuse to lay before you the evidence at hand invested with all its local colouring.

If the causes of decay have been rightly surmised in this short communication it is not difficult to suggest a remedy. Looking back to the original cause, we find it to be dependent on tampering with the original source of the nation's prosperity without leaving it with an adequate compensation.

To provide the necessary compensation to-day would be to advocate protection for a weakened industry, such as agriculture has become, but here we enter into debatable politics, which I

had better let alone. I cannot conclude this short *resumé* without expressing my acknowledgement to Drs. Herbert Jones and H. Cecil Moore, medical officers of health, for the assistance given me in procuring the vital statistics which form the basis of this paper.

(<sup>1</sup>) A paper read at a meeting of the South-Western Division, held at the Hereford Asylum on April 18th, 1907.

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### Clinical Notes and Cases.

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*A Case of Katatonia in a Congenital Deaf-mute.* By HENRY DEVINE, M.B., B.S., M.R.C.P.(Lond.), Assistant Medical Officer, London County Asylum, Long-Grove.

THE patient, A. W—, is æt. 18. He was admitted to the Cane Hill Asylum on February 2nd, 1907.

The *family history* presents no special features of interest. The only evidence of neuropathic tendency was in an uncle on the maternal side, who suffered from a brief attack of melancholia subsequent to a fever. Both parents are alive and healthy.

The following *personal history* was obtained. He was born prematurely and was a congenital deaf-mute. Had always been healthy, and until now had shown no sign of mental disturbance. The temperament is described as sensitive, but affectionate and obedient. Having received special training he had acquired some skill in oral language, and could interpret speech if the words were pronounced slowly and the lip movements accentuated. He was intelligent and quick at acquiring knowledge, and besides reading a great deal manifested artistic tendencies, being able to draw and paint in water-colours. His chief amusements were chess and cricket. Latterly he had been apprenticed to a skilled trade, at which he was making considerable progress.

The *present illness* appears to have commenced about three weeks before admission. Sleep was disturbed, and he suffered from gastric disturbance and obstinate constipation. His disposition, which had hitherto been bright and cheerful, became gloomy and perturbed. He was apprehensive about religious matters, and told his parents that he was very sinful. By constantly brooding over some trifling act of disobedience he magnified it into a sin for which he could never obtain forgiveness. These morbid ideas of unworthiness were followed by severe convulsive attacks lasting about ten minutes. There was marked tonic spasm with opisthotonos. These were succeeded by violent and irrational conduct, in which he would roll about the floor, and he refused his food owing to a delusion that it had been poisoned. He became extremely resistive, attempted to strike himself, and was extravagant and incoherent in speech, religious phrases predominating in his deliria.

On *admission*.—The patient was tall and poorly nourished, but did not present any notable anthropological stigmata of degeneration. The temperature was 99°·6° F., pulse 92, respirations 20. Knee-jerks active.



Pupils equal, dilated, reacting to light and accommodation. He was in a semi-stuporose state, with vacant expression, aimlessly resistive to examination, and with cold and cyanosed extremities. The limbs were rigid and resisted any change of position, but tended to remain in any unnatural posture in which they might be placed. He allowed himself to be fed.

February 3rd.—The stupor was followed by motor restlessness. At one time he would be crawling about the floor of his single room and attempting to extend his excursions on his hands and knees into the dormitory, and at others trying to climb the walls of the room. Sometimes this restless behaviour was varied by the assumption of ecstatic and enraptured poses, the limbs becoming rigid, head turned upwards, and hands in an attitude of prayer. He gave expression to no intelligible speech, but only meaningless and inarticulate noises. He was neglectful in habits.

February 4th.—Was still restless but able to be up, and it became apparent that he had the power of speech. He was interrogated by speech and writing, and seemed to comprehend what was said to him if the words were pronounced slowly with distinct lip movements. His own speech was of similar character, with no inflections of tone. He was quite deaf. The patient could give no account of himself. He was constantly saying, "Round and round and round," accompanying this expression with circular movements of the eyes and hands in a monotonous and stereotyped manner. His face seemed to express intense surprise.

February 7th.—Recognised his relatives and manifested some pleasure at their visit by a fixed and rigid smile, but showed no depth of emotional feeling. He still repeated monotonous and incoherent phrases of a more varied character, but conveying no real meaning. He took his food and slept well.

February 15th.—Somewhat more rational. When asked to describe his recent mental state he was able to express that he seemed to have been going round and round as if his eyes had been revolved, and thought he had seen the sun and moon, visiting the latter on an airship. His condition varied from day to day, and consciousness gradually became clearer. He recognised those about him, admitted that he had been ill, attended to the calls of nature, and took his food. Amnesia was only evident in respect to the period during which he had been the subject of acute mental disturbance. The speech was still, however, at times incoherent, and he would write similarly on paper. A typical example is as follows: "Pray to Jesus the earth is all right, be in time to save the earth, motor-cars in the heaven, I saw him at Maskelyne and Cook's."

On March 2nd a fresh and somewhat remarkable mental phase became evident. I observed him seated on a chair with back bent, arms by the sides, an abstracted, dreamy expression, and some nasal mucus escaping unheeded. There was marked *flexibilitas cerea*. He showed no impulses or spontaneous activity whatever, neither at this time nor during the remainder of his stay in the asylum. With one exception, which will be mentioned, he neither spoke nor moved of his own accord.

In spite of this he was highly responsive in an automatic way to imperative external influences. Such appeals produced the appropriate response and nothing more, this passive obedience in combination with the extreme *flexibilitas cerea* giving rise to some very striking manifestations. Thus, if during the progress of any activity, elicited by suggestion, he was suddenly told to stop, his attitude would remain fixed indefinitely in whatever position he might happen to be at the moment. So still and immovable would he be in such a pose that he looked more like a statue than a living man. This feature is sufficiently illustrated by the photographs. The former is taken at the conclusion of the act of writing. The pencil and paper were then slipped out of his hand, which in the second photograph can be seen to have remained in identically the same position as they are in the first.

Not only was such a condition apparent in the limbs but equally so in the facial muscles. Thus at the end of his replies to questions the mouth remained in that particular shape which it had assumed in pronouncing the last word. This was especially obvious, because in speaking he exaggerated the movements of the lips. To give an instance, if "yes" was his last word and no further questions were addressed to him, the lips would remain parted and the teeth almost approximated. If told to smile he remained smiling indefinitely. Asked to shake hands he held out his stiffly and kept it in that position. When told to walk to the door he at once obeyed, but remained there until some fresh activity was suggested to him. Even when his parents stood in front of him interrogating the attendant as to his progress he remained quite indifferent to, and unaroused by, their presence, until they appealed to him personally, when he at once became aware of their vicinity and smiled, remaining fixed in the new pose. Having thus responded to this perception he required further objective conditions to elicit any further response. Such were furnished by questions which they might address to him and to which he gave suitable, but monosyllabic, replies.

The following two observations which are recorded were suggested by Dr. Mott, to whom I was able to show this case :

He was given pencil and paper and told to sketch a fellow patient. Keeping his eyes fixed on the model he began to draw and quickly reproduced a representation of the face. The result was of necessity extremely crude seeing that he only looked at the model and not at the paper, but still the main features were delineated. It reminded one of the curious results obtained in the well-known game of drawing a pig with the eyes shut. Having completed an outline of the face he began to draw another over the original, not once lifting the pencil. At the end of fifteen minutes the net result of his artistic efforts is seen in the drawing A. Naturally it is apparently only a mass of meaningless lines. During the whole of this time he looked like one in a dream, and but for the movements of the wrist remained rigid and immobile. Towards the end the only signs of fatigue were some slight swaying of the body and watering of the eyes. There is no reason to suppose that he would have ceased until overcome by exhaustion, but the experiment was concluded by diverting his attention, when he turned his head, remaining fixed in the new pose. He was next told

to copy the geometrical figure  $B_1$ . The result produced ( $B_2$ ) illustrates his method better than the preceding, as the resemblance to the original is obvious, and he was stopped sooner in order to prevent the copy from being too confused for recognition.

He was unable to cope with complicating circumstances in ordinary routine activities. Thus, he was told to undress and go to bed. In his stiff, dreamy way he removed his clothes, but was at quite a loss to know how to proceed further as the bed-clothes had been purposely tucked in all round, and at the head of the bed they lay under the bolster and pillows instead of over them as is usual. It was not until the situation was demonstrated to him that he pulled the coverings down and got into the bed.

The only spontaneous activity he ever exhibited during this period was in response to the quasi-external stimuli from the bladder and rectum. To these he responded automatically and cleanly.

During this period his speech was in keeping with his limitation of activities.

He never ventured a remark spontaneously, his conversation being a correct, but reflex, response to questions. Such replies were always monosyllabic, and no associated ideas were aroused in his mind leading to any elaboration of speech or inquiries on his own account as is usual in ordinary conversation. After his reply he would sink again into complete immobility, apparently oblivious of his surroundings and interrogator. The following is characteristic of such a conversation:

"How are you?" "Quite well."

"Who am I?" "Doc-tor."

"What is this?" "Ther-mom-eter."

"When did you see your parents last?" "Sun-day"—after hesitation.

"What are you thinking about all day?" "Nothing," or sometimes, "Home, and father, and men."

At this period he denied all hallucinations or delusional ideas.

If told to write a letter, pencil and paper being put into his hand, he would continue writing until the sheet was filled and would then relapse into apathy, neither turning over the sheet nor asking for another. An example is given, and it contains phrases almost identical with those written on other occasions. The writing is quite different from his normal style, and it is seen to be childish and quite lacking in character. It is also noticeable that one word is joined on to the other as he scarcely ever lifted the pencil, and for the same reason the "t's" are uncrossed.

Physical examination showed the temperature to be invariably  $98^{\circ}$  F., with no evening rise. The pulse varied between 80 and 86 per minute. The pupils were dilated. Readings taken with surface thermometers showed the temperature of the skin to be much lowered over the extremities, which were markedly cyanosed. There was no loss of tactile sensation, but marked diminution of painful sensation. Taste and smell were disordered. He could not identify the taste of quinine, sugar, or dilute acetic acid, beyond stating that the quinine was not bitter but seemed different from the sugar. He was unable to distinguish the smell of cloves and peppermint, and experienced no disagreeable sensations from the smell of glacial acetic acid.

I want to go home I want to see Father and  
 Mother I love them Anderson I wish to be at  
 home now I hope doctor could let me  
 go home I have been wanted to be free I want to  
 be with my mother and father  
 and mother I want to see them

Facsimile of letter written by patient during cataleptic stage.

To illustrate Dr. H. Devine's paper.





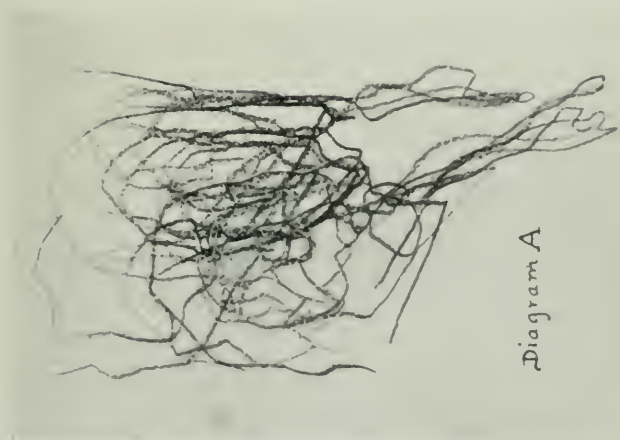
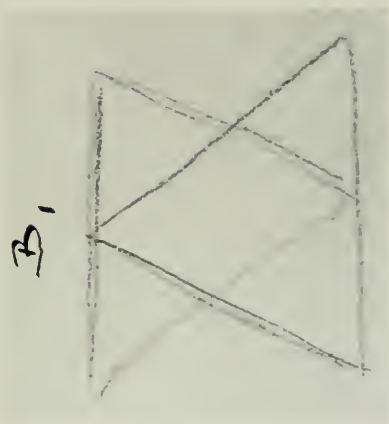
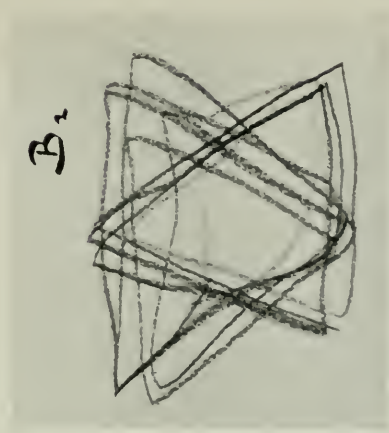


Diagram A

Copy of drawing made by patient of a fellow patient's face.



Geometrical figure drawn for patient to copy.



The result produced.





Patient photographed at the conclusion of the act of writing.



Patient photographed after pencil and paper had been slipped out of his hands. The position of the fingers and hands is seen to be identical in each photograph.

To illustrate Dr. H. Devine's paper.





In this cataleptic state he left the institution on March 31st under the care of his parents. Three weeks after this I was able to see the patient again in his own home. Beyond some slight nervousness he had completely regained his normal mental condition. He recognised me at once, and displayed with animation some photographs he had taken and developed at the seaside, from where he had just returned. Whilst there he had been out unaccompanied for hours together with his camera. He had completely forgotten the earlier periods of his illness, but was able to accurately describe many of his impressions and experiences during the cataleptic phase. Considering his apparent apathy it was somewhat striking to hear him speak of trifling details which he had observed, some of his remarks being penetrating and sarcastic. Thus he commented on my asking him to draw a patient who was attired in ordinary working costume, because I had said: "Sketch that gentleman." He seemed to consider it curious that such a term should be applied to one so roughly clad—an erroneous attitude not unusual in adolescence. He also expressed disapprobation of the crude methods which some patients adopted in eating their food. The catalepsy and lack of spontaneous activity had vanished shortly after leaving the institution.

Communication was, of course, somewhat irksome owing to the auditory defect which he had inherited, in fact, as I personally found it difficult to make him understand what I might say, my usual method of communication was by writing. With this exception he appeared to be a normal, animated lad, full of intelligent interests.

### *Remarks.*

The case appears worthy of record owing to its occurrence in a congenital deaf-mute, and to the curious state of automatism and catalepsy which formed so prominent a mental phase. To employ the record of a single case as a pretext for reviewing the evolution of meaning which the term "katatonia" has undergone since its introduction by Kahlbaum would be out of place. Since, however, it has been the basis for so much discussion and so many shades of opinion have been expressed, it seems requisite to explain its use in the present instance. Seeing that various authorities differ so widely in their views it appears advisable to look on the concept katatonia as a convenient term by which to label a group of well-marked symptoms rather than the name of a special morbid entity. In this case the cardinal features of the katonic-symptom-complex were peculiarly well marked, hence the use of a word which expresses them most conveniently.

As such symptoms can evidently occur in widely divergent mental states, such as dementia præcox, senile insanity, epi-

lepsy, and hysteria, an attempt will be made to interpret their significance in the present instance and to discover their underlying basis. The original defect in the patient was auditory, and the mutism secondary to this had been to some extent remedied by careful training, as is not unusual in the cleverer congenital deaf-mutes. As will be suggested later this inherent deficiency probably has an important ætiological bearing on the acute mental disturbance from which he suffered. The cyclic course of the disease is well marked: the onset with gastric disturbance and melancholia, the stage of excitement, the cataleptic stage, and then sudden recovery. The earlier periods include many of the classical katatonic manifestations. Its chief features were psycho-motor agitation, convulsive attacks, multiple hallucinations, and fleeting delusions, stupor with rigidity or "waxy" muscular condition, negativism (refusal of food and senseless resistance), mutism, stereotypy, ecstatic poses, and personal neglect. The speech anomalies, always important in katatonia, have an added interest in a congenital deaf-mute. They may be included under the term "verbigeration," and were fully discussed in a paper by M. J. Nolan (1). It is not only the expression of mental confusion but is actually a disturbance of the speech centres with their associative connections, that is, a functional aphasia. It may be manifested by dumbness or a confused intermingling of words, often repeated again and again and quite out of keeping with the inflections of voice and emotional gestures which accompany them. Whereas speech in normal human beings has become mechanical, in a deaf-mute it is acquired with difficulty and would always require concentration and effort, factors rendering it more liable to disturbance. Thus there was first mutism in spite of emotional attitudes indicative of active though disordered ideation, then meaningless and incomprehensible sounds, and still later the constant repetition of one word with very striking motor accompaniments. Afterwards he began to speak in jumbled phases, not toned, however, in the manner described by Nolan, since his voice had never acquired inflection of tone.

The cataleptic phase is especially interesting, and demands more detailed notice. Its chief features were loss of initiative and voluntary action, increased suggestibility, and a striking tendency to automatism manifested by the catalepsy and the continuous repetition of one series of movements. Such a

reduction of the personality to the status of a highly complex automaton is closely analogous to the lighter degrees of artificial somnambulism or hypnotism. In the more profound stages of hypnotism there is subsequent loss of memory for what has occurred, and also greater disorientation manifested by the acceptance of suggested hallucinations—phenomena which were absent in this case.

Apart from permanent dementia, which is here out of the question, in conditions of stupor or catalepsy consciousness may be in a state of dreamy reverie or even profound torpor, or else dominated by the presence of some absorbing idea. The latter (*melancholia attonita*) though frequently by no means easy to exclude, was evidently not the condition present in this case; on the contrary, an intense disturbance of the higher sensorimotor realms had been followed by exhaustion, which is represented by a passive and inert consciousness rather than one active and engrossed. If the patient had been intensely preoccupied by some delusional idea his features would have been expressive of some painful or ecstatic emotion, and he would have been irresponsive or possibly actively resistant to external influences, instead of which the face was vacant and devoid of even momentary expressions of emotion, and he showed passive obedience to vigorous solicitations from without. Again, the clues obtained by speech and writing reveal no predominant ideas, but simply ill-defined, almost subconscious yearnings for a more familiar and congenial environment indicative of a vague, dreamy, semi-depressed consciousness insufficient to stir him into any form of activity.

His view also of the environment was vague and impersonal. Apparently it appeared strange and unreal to him owing to some residue in his consciousness of the hallucinations which were prominent in the earlier stages. A remark made subsequently to his parents in reference to the cataleptic stage lends itself to such a view. He said that he felt as if he must close his eyes sometimes as the light in the asylum seemed so strange and confusing. While, therefore, he evidently perceived his environment, and was able afterwards to comment on what had occurred, he did not realise its relationship to himself unless aroused into activity by some directly personal appeal. Here, then, as in hypnosis, was a condition of narrowed consciousness which serves to explain the suggestibility and automatism.



“When in states of enfeebled initiative suggestibility appears, it does so, not as an added or accidental phenomenon, but as a natural consequence of the former. . . . When the independence of initiative is reduced towards complacency, and all assertiveness and resistance is exchanged for abeyance or passivity, the vacating thus induced opens the channels to any vigorous solicitations to which the mind may be exposed. With the normal initiative disabled or suspended the responsiveness to suggestion follows inevitably . . .” (2). Such a statement, though especially referring to hypnosis, applies to any condition, whether artificial or pathological, in which there is narrowing of consciousness.

It has been pointed out by W. R. Dawson that such a conscious state is the essential factor in katatonia, and that the various phenomena which occur are all dependent upon it (3), because if an idea of movement is present in consciousness with no opposing ideas and tendencies, the corresponding movement inevitably follows. In this case, therefore, since any idea which might be suggested from without would meet with no associated or contrary ideas necessitating deliberation and choice, it would remain isolated, as it were, in consciousness, and the appropriate train of activities would of necessity ensue. Thus arises the suggestibility. Furthermore an idea implanted in this way tends to persist and have a continued effect. Hence we have the various manifestations of automatism. In catalepsy the suggestion arises through the muscular sense, and the idea of position remains indefinitely until displaced by further suggestion. Similarly the continuous series of drawings, which was described, may be explained. The physical basis of such a conscious state must be functional inactivity of the higher cerebral centres analogous to the condition of the decerebrated frog. His activities, while not completely unconscious, were essentially reflex, mechanical, and lacking in intelligence. Only those elements of an activity which are normally subconsciously performed could be elicited, those elements indicative of a fuller consciousness giving it a purposive and intellectual character being entirely wanting, such want of higher cerebral control being especially obvious when the objective conditions guiding the perceptual activities were complicated in an unusual way.

In such a case some modification of routine procedures is

required in order that there may be suitable adaption to the new conditions. Thus when the bed-clothes were changed from their usual position merely automatic actions were useless; there was a need for an intelligent appreciation of the altered circumstances and an intelligent modification of conduct in accordance with them. Such conduct he was incapable of displaying.

The close relationship between katatonia and hysteria has been frequently noticed, and as regards this case the relationship would appear to be particularly close, in fact, it may be considered as a purely hysterical insanity.

Séglas and Chaslin (4), in an extensive review of the subject, commented on the hysterical nature of the symptoms, and Bevan Lewis (5), when referring to the cases described by Kahlbaum, expresses a similar opinion.

The predisposing cause is to be found in the congenital defect. While observing the patient in his own home, when he had regained his normal personality, it was impossible not to be struck with the relative isolation which he must experience. Since conversation with him could only be carried on with some effort it is inevitable that he would be only able to take a very partial place in collective social intercourse. Hence he sat turning over magazines or occupied with his own thoughts for the greater part of the time. Such a life must of necessity, even when surrounded by the closest friends, tend to be solitary and monotonous, leading to constant morbid introspection. The habit of day-dreaming and self-analysis, so frequent during adolescence, would be greatly intensified in one afflicted by congenital deafness. And thus the dawning instincts of sex, the widening view of life, the vague cravings and longings, instead of finding adequate expression, would only serve to make him realise, as he had never done before, his severe limitations and tinge his feelings and emotions with gloom. He would tend, therefore, to fall into that "hypnoid-state" which forms the soil for the various manifestations of hysteria (6). Under the influence of some shock, lowered state of bodily health, or, it may be, onanism, the nervous system—probably congenitally unstable as he was born prematurely—would break down, and these repressed and subconscious emotions would rise into predominance and manifest themselves in some explosive manner such as an hysterical convulsion.

Viewing the case both from a psychological and clinical aspect its hysterical nature is equally manifest. Whatever symptoms may be especially prominent hysteria is essentially a psychic disorder. On the one hand, beyond some capriciousness and instability of character, its mental aspect may be obscured by some somatic abnormality, and on the other hand the mental symptoms may be so intense as to lead to grave disorders of conduct, bringing the case under the category of hysterical insanity. Whatever the symptoms they are all the expression of a dissociated consciousness due to a want of harmony between higher and lower control centres, with the inhibitory control of the former in abeyance, an isolation, that is, of one portion from the other. On the physical side this may be manifested by general convulsions following some trivial excitation of the motor centres, and on the mental side by the exhibition of a personality a prey to an uncontrolled imagination and influenced by emotions and images which normally belong to the realm of the subconscious. There is more or less extensive loss of function in some portion of the cerebral muscle with increased potential of the rest. Such is observed in the later stages of this case when the higher intellectual attributes of the personality were wanting, showing loss of activity in the higher centres; with this was increased suggestibility the expression of increased potential in the lower.

The clinical symptoms of such dissociations are briefly characterised by their diversity and mobility, the presence of certain degenerative stigmata, and the rapidity by which the control of the normal personality is regained.

All these features were noticeable in the case of A. W—. The degenerative stigmata which are of great importance in the diagnosis of hysteria were manifested in the marked analgesia and the disorders of smell and taste. The sudden transition from depression to ecstasy, the half-hearted attempts at self-injury, the dominance of subconscious emotions, sexual, religious, and infantile, manifested so diversely by convulsions, stereotyped and enraptured poses, and the curious series of childish attitudes as he crawled about the floor, are all symptoms suggestive of hysteria. They resemble, indeed, in nature, if not in actual sequence, those cases of hysterio-epilepsy described by Charcot.

The stage of catalepsy and automatism, with the apparent

apathy in respect to the environment in combination with a critical observance of trivial details, furnishes a clinical picture equally characteristic of hysteria.

Lastly, the sudden recovery, which was so remarkable a feature, tends to favour the view which has been advanced.

What physical conditions produced this alteration of cerebral functions will not be here discussed. Possibly it was due to nutritional changes the result of auto-intoxication or vaso-motor spasm. It is hardly, however, to be expected that any demonstrable pathological lesion would be found in a case so essentially functional in all its features.

While somewhat accentuating the hysterical nature of these symptoms the ultimate prognosis of this case may still possibly be not altogether favourable. Kraepelin appears to insist that such symptoms are almost always followed by greater or lesser degrees of mental enfeeblement. To what extent such will be the case in this patient time alone will show. In a communication with the patient's father three months after discharge he said that his boy was back at his work and seemed quite well but for some slight want of continuous application and a readier fatigue than he had formerly manifested. Whether this weakness is temporary or permanent, or whether the whole mental disturbance is but an incident in a graver disorder leading to ultimate dementia, it is difficult to determine at present.

In conclusion I must express my thanks to Dr. Moody, the superintendent of the asylum, for permission to publish the details of this case.

#### REFERENCES.

- (1) "Is Katatonia a Special Form of Mental Disorder?" *Journal of Mental Science*, October, 1892.
  - (2) Joseph Jastrow, *The Subconscious*, fol. 501.
  - (3) W. R. Dawson, *Journal of Mental Science*, January, 1904.
  - (4) "Katatonia," *Brain*, vol. xii.
  - (5) *Text-Book of Mental Diseases*, fol. 272.
  - (6) J. J. Putman, *Journal of Abnormal Psychology*, April, 1906.
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## Occasional Notes.

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### *The Annual Meeting.*

The Sixty-sixth Annual General Meeting of the Medico-Psychological Association of Great Britain and Ireland, held in London on July 25th and July 26th, 1907, yielded pride of place to none of its predecessors in the importance of the business matters considered, in the scientific interest of the subjects discussed, in the number and representative character of the members present, or in the genial and hearty nature of the proceedings.

A society which can call together such a meeting in London so late in the season shows a vitality and energy that may well be a matter of congratulation to its associates.

Besides the ordinary affairs of the Association, such as the working of the nursing system, the relations of the staff of asylums to the new legislation in regard to employers' liability, and so forth, the unfortunate series of events which have come to be known as "the Carswell case" were considered at length.

Dr. Robert Jones terminated his year of Presidency in which so much useful and brilliant work had been done, and Dr. P. W. MacDonald assumed the responsibilities of President of the Association. Dr. MacDonald delivered an address of much eloquence and vigour, in which he reviewed in the most interesting way the lunacy and social statistics of his county for the last twenty-five years. The keen observation and shrewd thought which this distinguished and energetic superintendent has given to his life's work were thoroughly appreciated by his audience, while his dignified conduct in the chair augur well for the year of office which he has just begun.

The annual dinner was well attended, and the guest list contained many names of distinction in various walks of life. It has rarely been our practice to refer to after-dinner speeches, but one speech made on this occasion deserves more than a passing reference if only for the deep impression which it produced upon its hearers, as shown by many references in the debate on the following day. Professor Clifford Allbutt, whose position, character, and experience make everything that he utters respected, spoke in weighty and well-considered words

on the desirability of the establishment of a ministry of public health. His earnest reasoning was thoroughly convincing, and we hold that it is the duty of every member of our profession to aid by every means in bringing about an object so essential to the advancement of the best interests of the commonwealth. We fear it may be long before the factions, misruling our country for the benefit of nobody except professional politicians, can be got to see the light, but the time will come when even party must follow the general advance of the age, and when England will not be able to lag behind those other countries which have found that the mere making of money is not the sole criterion of a nation's well-being.

Another after-dinner speaker, reminiscent, perhaps, of Robert Burns' line—

“A chiel's amang ye taking notes”—

varied the flow of his polished and delightful oratory by a humorous application of the statistical method to the question of alcohol. The yellow press swooped gaily down upon the convives a few days afterwards with a circular requesting that they should advertise their sentiments and habits with regard to the consumption of alcohol! If the yellow pressman was under the patronage of a god as powerful as Bacchus, probably that divinity would

“Better for his life provide  
Than public means which public manners breeds.”

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The outstanding points connected with this meeting—the points which will give it a special mark in the history of the Association, are, besides the President's remarkable address, the following: Firstly, the discussion on the Carswell case, and the vigorous action which it was determined to adopt thereon. Secondly, the public recognition which all the speakers in the Clouston discussion gave to the necessity of reviewing the position of the various lunacy departments in these countries. The feeling was general that there is urgent need of a Ministry of Health, under whose control, and not under that of a multitude of incoordinate boards, the insane ought to be placed. Thirdly, the demonstration by Dr. Albert Wilson, which was as entertaining as a romance, as wonderful as the exploits of

Zoe, and had further beneath its fascinating attractiveness a profound interest for us, as showing, among other things, the vast power of personal influence in the borderland realm of mental instability. Dr. Easterbrook's carefully elaborated paper on tent life indicated that the broad, physical lines of treatment in insanity, first, perhaps, sketched by the school of Cos, have not lost their interest or their value to the most advanced observers of to-day. Last, though not least, we must commend to the special notice of our readers the epoch-making observations of Drs. Ford Robertson and McRae. Such work as this the scientific world will not willingly let die. It can never lose its worth in the history of progress, for it can only be superseded when it has brought forth observations more keen, careful, and laborious than those which lend to it eminent distinction. Such work as this is the best answer to the shallow and ungenerous sneers of those who strive to aggravate in modern minds the secular prejudice that exists against our specialty by insinuating that we are unscientific and indifferent to the advance of knowledge, because most of us are doomed under the Egyptian bondage in which we live to make bricks without straw. Give us a public who deems that out of the superfluity of the richest people in the world it can afford to endow clinical and pathological research, give us, in other words, opportunity, and the men will not be lacking who will be ready to give their lives to the service of science, as so many of our young men now burn to do, as so many of our older men have done under difficulties hitherto all but insuperable.

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### *The Alleged Decrease of Insanity.*

The alleged increase of insanity has been a perennial source of interest in the lay and medical press for so many years, that it is almost with regret that its demise has to be recorded, and the introduction of a new head-line brought to notice. The decrease of insanity is certainly a more agreeable subject, although it cannot hope for the popular support that has been so cheerfully accorded to its predecessor by the melancholy pessimists, who love by pictures of decadence to make the national flesh to creep.

The possibility of a decrease in the occurrence of insanity has been foreshadowed in the blue books of the three kingdoms during the last few years, but the statistics of insanity have been so liable to fluctuation that temporary decreases have been regarded with distrust, as they must continue to be; nevertheless, the continuance of a depression of production of insanity, culminating in an actual diminution in the numbers of the insane as recorded in this year's report of the Commissioners in Lunacy for Scotland, justifies the consideration of lunacy statistics from the aspect of possible decrease.

The report states that since 1858 the number of lunatics under the cognisance of the Board had steadily increased until 1904, in which year there has been a decrease in the proportion of lunatics in every 100,000 of the population from 363 to 362.

This decrease, following on two previous years in which the proportion has remained stationary, is significant, but by no means conclusive.

Beyond the numbers of the insane officially recognised there is a considerable number of persons of unsound mind not on the register, and the temporary arrest of increase might be due to causes limiting the previous increment from this source, or to temporary increase in the death or recovery rate.

The decrease, however, as the Commissioners point out, can be satisfactorily proved to be due to the diminution in numbers who have been placed on the register during the past four years, the maximum of 3,660 placed on the register in 1902, having diminished to 3,449 in 1905, and 3,370 in 1906, this diminution in a considerably increased population being really very striking.

Still more striking, however, is the diminution in the number of insane persons who have never been registered previously; these had reached the proportion in 100,000 of the population of 62·8 in 1902, falling in the last four years to 60·7, 60·6, 57·6, and to 54·3 in 1906.

This would appear to indicate a very considerable falling off in the occurrence of insanity, but must not be relied on too confidently. In recent years in Glasgow a considerable number of cases of mental disorder of brief duration are treated to recovery without admission to asylums, and it is a question whether the number so treated may not have affected asylum statistics.



A possible statistical fallacy is thus introduced. The two classes of cases being treated under two independent official bodies there is a difficulty in satisfactorily combining their information. This is an additional argument in favour of the establishment of a ministry of health which should have general supervision in all health matters and furnish definite information in such cases.

Whether these statistics indicate an apparent or real diminution in the production of insanity, they are at least satisfactory as an evidence that we may expect that there should certainly be a decrease in the rate of the erection of asylums.

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*Questions on the Alcohol Question : the Use of Alcohol.*

The question of the use of alcohol was raised in connection with the annual meeting, and drew the attention of one of the most active of the daily papers to the views and habits of the members of the Medico-Psychological Association. Publicity has thus been given to the fact that, although as a body we advocate temperance, and to some extent enforce total abstinence in our asylums, as individuals the large majority use alcohol as an habitual article of diet. It behoves us to consider whether we are setting a bad example by habitually using a noxious poison, or whether we are availing ourselves of one of the means of enhancing the pleasure of life in using that which in moderation can "gladden the heart of man," and thus tends to aid his evolutionary progress.

The question, indeed, is ever the same : Is alcohol an absolute poison, in all quantities, or has it any use whatever as a food, stimulant, or for any other effect ?

On the one hand, the striking fact presents itself that some of the most progressive nations have habitually used alcoholic beverages for long periods. If alcohol is a poison why have these not deteriorated or become exterminated ? Is there progress in spite of, or by reason of, their alcoholic habits ? On the other hand, the Hindoos and Mahommedans who have been non-alcoholic for centuries, have not appeared to develop as rapidly as the alcoholic races, and, indeed, seem—in the case of the Mahommedans—to have undergone serious deterioration.

Has the decadence of the latter been by reason of, or in spite of, their non-alcoholic habits.

These offer the largest experience in the use of alcohol which the history of the world presents—extending over centuries and affecting myriads of individuals. If properly studied a conclusive opinion can surely be formed from so vast an experiment.

The main argument from experience of the total abstinence partisans is based on the insurance returns, and on the first glance they are very convincing, but if they are considered without bias they become less evidently conclusive.

The man who practises total abstinence in the midst of an alcoholic population is either impelled thereto by a strong determination or is compelled by his organic inability to tolerate alcohol. In all cases, the total abstinence is a proof of the possession of a life-long habit of self-control, which would act also in the other relations of life, the instinct of self-preservation being highly developed. Since these individuals are a chosen class, who devote much attention to their self-preservation, to compare them with the large majority of men who lead a life in which the enjoyment of the present, with its consequent risks, is predominant, is not a fair comparison.

Is the longer life of the one class not due to their greater self-care all round rather than to the total abstinence? Would they not live as long if they used alcohol with the strict self-control which their character would produce?

Again, is length of life the final test? A total abstinent ascetic in his cave lives to a hundred years, the Mahommedan and Hindoo live as long, or nearly as long as the alcoholic European, but, tested by the amount of work done, which is the fullest life? The non-alcoholic races may equal or surpass the alcoholic in muscular work, but can they equal them in the higher forms of energy, the intellectual, and in persistent endurance of nervous stress?

Another question is whether the non-alcoholic persons in alcoholic populations suffer less from nervous and mental breakdown, and whether they exhibit a greater amount of intellectual energy? Here, again, however, the question is by no means simple. Very many young abstainers break down: Is it from inherent weakness, or from loss of a racial habit? On the other hand, many inherit a vigorous self-control, which makes

them a special class, but is this due to non-alcoholic habit or heredity?

If it is conceded that alcohol is of possible use the question still remains whether, in consideration of the evils which are apt to develop from its habitual employment, other forms of food or stimulation cannot be more advantageously employed, and whether human evolution would be hastened or delayed by the change? The morbid desire seems to be for Lethe, in drink or drugs, and it has been shown that the asylum drunkard is, almost inevitably, a degenerate person hereditarily burdened with neurotic inefficiency.

These, and many other questions in regard to the use of alcohol, demand a more thorough and impartial examination than has been accorded to them, and the Medico-Psychological Association would do well to make a serious effort to give the public a definite answer to those which lie within the limits of its special experience.

We fear, speaking from the depths of a profound thought, happily, only temporary ignorance, that the solution is not to be found on the lines laid down by a recent writer in the public press, who tells us, over letters implying that he is a physician, that the mental defect produced by alcohol is not insanity, and that insanity is probably produced by a trypanosome like the "sleeping sickness." One wonders at many things in this lofty statement. If the Porter in Macbeth were still at hand to be questioned, he might exclaim: "In sooth, aye! the sleep were a likely tale, but what of the others, my masters, the nose-painting, and the rest?"

Some poor heretics from the modern trypanosomatous faith, living in drunken lands, and unable to shut our eyes to what is happening under our noses, feel rather inclined to subscribe to the old vulgar view prevalent since Noah was an exhibitionist, and well phrased by the great thinker Berkeley when he tells us that the experience of every village shows that drink ruins in mind and body every man who takes to it—"except," he quaintly adds, "a few of the devil's decoys."

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## Part II.—Reviews.

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*A Text-Book of Psychiatry.* By LEONARDO BIANCHI, M.D., translated by JAMES H. MACDONALD, M.B., Ch.B.

Professor Bianchi is already so well known in this country as an eminent and distinguished psychiatrist that the translation of this important work from his pen will be especially welcome to all those who are interested in the study of insanity. He has produced a book which is worthy of the highest place in the literature of the subject, and one which will no doubt rank as a standard work. By interpreting the facts of insanity in the light of the most recent researches in psychology and in the anatomy and physiology of the brain, he has placed the whole subject on a broad and scientific basis, and presented it in a manner which abundantly demonstrates the great progress which has taken place in this branch of medicine in the last few years. In no instance is the author content with a mere recital of symptoms. Each type of mental disorder is subjected to a keen psychological analysis, in which a consistent effort is made to trace the essential change which has occurred in the personality and the factors which have led to its disintegration. Disputed questions are treated by a historical and impartial survey of the various views that have been advanced, followed by a clear statement of the author's own opinions, this impression of individuality which pervades the whole book forming one of its most pleasing features. Though adding to the size of the volume, it would perhaps have somewhat enhanced its value as a work of reference if a bibliographical list had been appended to the end of each chapter.

The contents are included in about 900 pages and are divided into three parts. Part 1 deals with the anatomy and physiology of the brain, Part 2 with the psychological aspect of insanity, and Part 3 with the individual forms of mental disorder. The volume is clearly printed and contains numerous diagrams and illustrations. The subject matter is so wide in its scope that it is only possible to mention briefly its salient features.

In the introduction the evolution of the nervous system, with its psychic counterpart, the mind, is shortly traced from the most primitive to the highest forms. Purely speculative problems, such as the relationship between mind and matter, and the question of intelligence in the lower organisms are not discussed, though a few pages are devoted to the practical considerations involved in the association of psychic disturbances with bodily disorders.

In the chapter devoted to anatomy an excellent account is given of the central course taken by the nerves of special sensation, and also a description of the motor tracts and associative fibres. The much debated "neurone" theory of Waldeyer and Ramon y Cajal is discussed somewhat fully, the opposing theory of "continuity," associated more recently with the names of Apaty and Bethe, receiving due prominence. The author would seem to favour the latter view, and, indeed, in a later



chapter he states that the neurone doctrine is almost dead, differing in this respect from many of the neurologists in this country.

The whole of the section devoted to the physiology of the brain is worthy of careful study, especially those pages which deal with the so-called motor areas. The problem as to the true significance of this cerebral region is beset with many difficulties. Many physiologists regard them as a portion of the extensive sensory zones in which the ideas and images of movements are located, these centres exciting the true motor centres which are situated at the base of the brain. According to such a view, a lesion of the Rolandic area does not cause a true motor paralysis, but rather a functional defect of movement due to inability to recall the necessary motor images or ideal conceptions which must precede any voluntary activity. This position is shown to be probably an incorrect one, and the author vigorously supports the opinion of Ferrier and others that this region is a true motor centre in the ordinary meaning of the term. Professor Bianchi's views as to the function of the frontal lobes are already well known, and they are here stated at some length, expressing as a final inclusion that "the frontal lobes are, in their ultimate analysis, the organs for the direction of the individual in the social and cosmic environment"—a sentence aptly describing their complex significance.

Part 2, devoted to psychology, both normal and morbid, occupies over 200 pages. Such an extensive survey of this aspect of insanity cannot be considered excessive. However much light may be shed on mental disorders by a consideration of the physical phenomena which accompany them, the necessity for a study of the subject from its psychological aspect cannot be over-estimated. A knowledge of psychology, divorced from metaphysics and based upon the scientific data of physiology and neurology, cannot fail to be of the utmost value in obtaining a true insight into the morbid transformations of the personality which occur in the insane, the importance of the subject justifying its full consideration in a work of this character.

The first two chapters are occupied by the consideration of sensation, perception and attention, with their disorders, embracing naturally the chief sensory disturbances, illusions and hallucinations.

Chapter III is devoted to the physio-pathology of memory, and includes an account of its special and general defects. In the former variety clinical examples are given of cases which manifest those symptoms known by the somewhat confusing terms of amnesia retrograda and anterograda. Several cases of duplicated personality are also described.

Chapter IV treats of ideation and its disorders with a long account of the development of language, indicating that in its rudimentary forms it is merely a method of emotional rather than ideational expression, and showing how it has developed coincidently with the evolution of the intellect. In discussing the laws of association special stress is laid on the importance of the law of contrast in the genesis of delusional states. It is shown that the attention devoted to an idea keeps the contrasting idea on the threshold of consciousness, and that this suppressed mental product is liable to obtain predominance in consciousness and manifest itself as a delusion. To mention an instance given by the author: An individual of religious temperament may

fortify herself by ideas of the Grace of God, and contrasting notions—fears of hell, etc.—remain as a menace to her peace of mind inactively in consciousness. If the “regulative power of consciousness decays the Grace of God disappears as an objective, and the ideative constellation of hell, demons and damnation with the relative emotions, is substituted for it (delusions of contrast).” Such views have been especially mentioned as they would appear to be very suggestive in elucidating many cases of delusional insanity.

Chapter V deals with emotions and sentiments. James’ somatic theory is fully discussed, though the author, while recognising the extreme difficulty of the subject, is unable to entirely accept his views. The last two chapters of this section deal briefly with the will and consciousness, their disorders being more fully treated in the clinical portion of the work.

Part 3 opens with a comprehensive scheme for investigating the “method and field of clinical inquiry.” In this part of the work—the study of psycho-pathology—the student cannot fail to be impressed, not only by the broad basis of the scientific reasoning upon which Professor Bianchi rests his analysis and conclusions, but also by the open and generous treatment of a subject that has been so largely obscured by the fruitless efforts of many able psychiatrists to form premature conclusions and classifications which have proved to be misleading.

While admitting that our ideal should be a classification based upon anatomo-pathological criteria, the author states that at the outset of his work he had reluctantly resolved against presenting any classification of mental diseases, deeming any such classification “almost useless, as giving only what is incomplete and therefore not very vital.”

In Chapter II he discusses the fallacies of a simple nosographic classification, and clearly points out the confusion which arises from that which is founded upon ætiology alone, or considered in respect to the various epochs of life. The psychological criterion followed by Mendel is also discarded as misleading and founded more on appearance than reality. From the classification adopted by Krafft-Ebing and Shüle, based upon ætiological and anatomo-pathological criteria, Professor Bianchi picks out the most important features, notably those which refer to the grade of evolution of the brain, and in a true eclectic spirit he says: “Having now recognised generally the impossibility of holding to a single criterion it is clear . . . that that classification gives promise of wider appreciation and longer duration, which assumes the greatest number of fundamental criteria on which is based the general knowledge concerning the genesis and nature of mental affections.” And with this idea he puts forward—as a working basis—a scheme “inspired by nosological, ætiological, and anatomo-pathological criteria,” comprising three groups:

- (1) Essentially evolutionary psycho-cerebral defects.
- (2) Mental affections of infective, autotoxic and toxic origin developing in individuals regularly evolved.
- (3) Affections with an organic substratum, localised or diffuse, in the central organ of mind.

That the author is fully cognisant of the difficulties that underlie even a scheme so simple, but yet comprehensive, the next few pages clearly

demonstrate; and a fitting reference is made to the clinical criterion adopted in its widest sense by Kraepelin. It is beyond the scope of this review to enter into the composition of the many subdivisions of these groups, which the reader will find most instructive and interesting; but it is not too much to say that Professor Bianchi has given us a classification—admittedly provisional—founded on the most acute observation, and based upon the most accurate and scientific criteria known to the world to-day.

Of the succeeding chapters, Chapter VI, on hysterical insanity, deserves special mention. In it the subject of hysteria, so frequently elusive and enigmatical to the student, is treated with masterly clearness and unflinching interest. The views of Sollier and of Janet are briefly reviewed by the author, and a useful footnote for reference and explanation is inserted—a feature which might have been extended with advantage to the reader of this work. Many instructive observations on cases, and several good illustrations illuminate the context.

It is difficult to select points of interest to comment upon from a book that from cover to cover is so productive alike of interest and knowledge; a reference must, however, be made to the chapter on sensory insanity—Chapter XVI. It is scarcely too much to say that here the student will find himself conducted to heights from which he may look down upon those other and lesser eminences which he may have climbed or essayed to climb without ever obtaining so clear and uninterrupted a view of the geography of the realm he studied to know. From this point of vantage he may obtain a clearer understanding of such vexed terms as “*amentia*,” “*acute dementia*” and “*mental confusion*,” and attempt to unravel the tangled controversy over the “*dementia præcox*,” so ably described by Kraepelin—a syndrome which was never intended to be more than a mile-stone on the road to the understanding of an important group of psychoses, and as such has been of infinite service to those who have profited by the direction it conveyed without wasting time in criticising its terminology. In most instances these mental states are regarded by the author as only syndromes, “*particular attitudes of the disease, not the disease in its entirety*,” or “*a chronological feature of a complex psychosis*.” Professor Bianchi, from his wide experience, has closely studied the disease from its beginning, and he says, “*the almost constant fact is the hallucinatory explosion*.” He regards hallucinations as the radical and substantial phenomena which provoke the abnormal intellectual and affective states, which are now familiarly known in asylums under various names, but which, he maintains, are not to be assigned the dignity of psychopathic entities, but must be “*framed in the picture which includes them all*,” *viz.*, the essential sensory disorder. This disease is traced through many grades, and instructively illustrated by well-described cases.

It is not possible to over-estimate this step forward in the interpretation of these various syndromes; and the light shed by the author's clear insight into their inception, and acute observation of their progress here as well as in his exposition of many other psychoses, notably paranoia and the neurasthenic states, will go far to elucidate those difficult problems which are the essence of psychopathology, and upon the



solution of which must rest the first attempt at a truly scientific classification of mental disorders. This review would be incomplete without a reference to the great service rendered by Dr. James MacDonald in presenting so admirable a translation to the many students of Professor Bianchi who are unable to read his work in the original tongue.

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*Physiological Economy in Nutrition, with special reference to the Minimal Proteid Requirement of the Healthy Man: an Experimental Study.* By RUSSELL H. CHITTENDEN, Ph.D. London: Heineman, 1905. Pp. 473. Price 14s. nett.

This important work on nutrition, how best to maintain the human body in health and strength with the least expenditure of energy, has been produced to show by scientific investigation what the physiological necessities are. The experiments were conducted with professional men, with volunteers from the United States Army, and with University athletes. Photographs of the subjects are given, and exact details of the conditions observed. The subject is not new, and the usual dietetic error of overfeeding has been attacked by many before and since Cornaro. It is not from the merely personal standpoint that Professor Chittenden states the case; it is rather as the result of accurate experimental research. It is apparent that the products of proteid metabolism constitute a menace to health, and the aim of those who desire the highest efficiency must therefore be to attain that efficiency on the smallest amount of food. Professor Chittenden, by careful analysis of the dietary, and of the excreta, justifies the general conclusion that a professional man can live on a much smaller amount of proteid food than is usually considered essential without loss of vigour; that soldiers require less than 50 grammes of proteid daily instead of 105 grammes. This economy led to an improvement of the neuromuscular apparatus with less sense of fatigue, under observation of five months' duration.

In short the work is an appeal for temperance, for "moderation in diet, especially in the taking of proteid foods, which means a great saving in the wear and tear of the bodily machinery."

Some years ago, in 1893, a committee of the Medico-Psychological Association reported upon Asylum Dietsaries. In view of the work accomplished by Professor Chittenden since that time, and the increased importance of metabolism recognised as a factor in the causation of insanity, it is apparent that the time has arrived to reconsider our position. Dr. L. C. Bruce urges that milk and plentiful hot drinks are demanded in the treatment of certain forms of mental disorder. Professor Meyer, of Göttingen, found that artificial feeding was rarely required, and Dr. Jules Morel, of Mons, has also been sparing of the stomach tube in his practice. The vulgar notion that every sick person should have a plethora of nourishing food is no longer tenable; and it is therefore of the utmost importance that we should make further inquiry into asylum methods in the light of strict experimental research. The value of Professor Chittenden's work has been widely acknowledged, and it should not be allowed to remain a dead letter for us.



*Metabolism and Practical Medicine.* By CARL VON NOORDEN. English issue under the editorship of I. WALKER HALL. London: Heineman, 1907. Price, complete in 3 vols., £2 12s. 6d. nett.

This translation is now before us in the first two volumes. The third volume is not yet to hand. The first volume deals with the Physiology of Metabolism in relation to Food-stuffs, Digestion, and Absorption, Fate of the Food-stuffs in the Tissues, and Metabolism in Man. The new view that the splitting up of the protein in the intestines is that the albumen of the food can be changed into the albumen of the tissues. The chemistry of the process is shown to be more complicated than was formerly believed, for the organism can interchange the proteins of tissues. Thus the intestinal process is not complete in itself, still the defect of intestinal physiological processes may seriously affect the general economy, and in cases of insanity form the nidus of disease. The specific ferments, which act on proteins, are now recognised, and the physiological chemistry of such bodies as uric acid and purin bases is discussed at length. In dealing with the average efficient intake of proteids it is stated that "one may scarcely call in question Professor Chittenden's results, but his conclusions are rather too general and are scarcely warranted," and, further, "those suffering from illness—the liver, kidneys, and, perhaps, above all, the nervous system—may be injuriously affected by such a diet." It is not likely that Professor Chittenden would press his conclusions to such extremities; the dietary which he prescribed for experimental purposes affecting healthy males must of course be adapted to the circumstances of disorder and degeneration.

Much was expected from over-feeding and massage when it was introduced by Dr. Weir-Mitchell, little good has resulted in asylum practice. We find it stated in this work that "the direct effect of massage has been extraordinarily over-estimated."

The second volume is of great practical interest. It deals with Hunger and Chronic Starvation, Over-feeding, Fever and Infection, and the various diseases of the bodily organs and systems. The result is a treatise on the metabolism of diseased conditions, an explanation of morbid phenomena of the highest importance. Professor von Noorden has associated with himself authors whose studies are authoritative in the domain of physiology and pathology, and the relations of metabolism in health and disease. For those who are endeavouring to illuminate the dark places of psychiatry the work is indispensable.

*Zur Psycho-pathologie des Alltagsleben* [*The Psycho-pathology of Everyday Life*]. By Prof. S. FREUD. 2nd Edition. Berlin: Karger, 1907. Pp. 132, 8vo. Price mk. 3.50.

In this volume (which is enlarged from a pamphlet published several years ago) Prof. Freud discusses such problems as the causes of forgetfulness (more especially in the case of fairly familiar facts), lapses of speech and of action, and, more generally, the significance of trifling, involuntary, even unconscious actions and words as the expression of

underlying and suppressed thoughts. The great actress, Eleanora Duse (the author mentions), when representing the part of a wife who is about to be unfaithful to her husband, mechanically plays with her wedding-ring, removing it, replacing it, removing it; the ring automatically becomes the symbol of the wife's fidelity.

All their lives, Freud believes, people are similarly revealing their secrets in an automatic manner, and the skilful physician of the mind is he who has trained himself to read that automatic language.

The general principle underlying all such phenomena is that imperfectly repressed psychic material, even though pressed out of consciousness, is still not deprived of every means of outward expression. A process goes on somewhat similar to that which, in a previous volume, Freud has sought to trace in dreams, real feelings and ideas being mechanically translated into new and perhaps trifling forms. In this way, Freud believes, all sorts of secret and even unacknowledged pre-occupations and wishes, sometimes of a sexual character, become transformed into an entirely different shape, which may, however, be traced back to their real source by careful psycho-analysis, because there are always links of connection. These involuntary words and actions of ordinary life are thus formed in exactly the same way as Freud believes that the symptoms of hysteria and obsessional neuroses are built up; "the boundaries between the normal and the abnormal nervous state are fluctuating, and we are all a little 'nervous.'"

Freud makes little reference to the work of other psychologists who have sought to elucidate the phenomena, as, for instance, to the American psychologists who have investigated lapses. He works out his own ideas, relies on his own observations, and adds to the interest of his book by the frankness with which he treats himself as a case for demonstration. Some of his demonstrations, as of a wrong word which persistently presents itself to the mind in place of the right word which cannot be recalled, though highly ingenious and elaborate, at times carry conviction. The author's faith in his method leads him to apply it to phenomena which usually receive a quite different kind of explanation. For instance, he believes that the illusion of false recognition, by which we seem to recognise a place we have never before seen, is not really an illusion at all; it is "the reminiscence of an unconscious day-dream," more especially when associated with some emotionally disturbing event.

There can be no doubt about the truth of the general principle on which Freud lays stress, that even the most trifling actions have a meaning, and are not without cause. Sometimes, also, the explanations reported by Freud in special cases are so adequate and apparently so demonstrable by independent evidence, that we cannot refuse to admit them. But in many cases, and especially when no independent evidence is available, doubt is inevitable, because other explanations suggest themselves. Thus, Freud is staying at an hotel where a young man, awaiting the arrival of his wife, seeks his society; a day or two later the wife arrives; Freud's society presumably becomes unnecessary, but the husband introduces the wife, and casually invites Freud to join the couple at their breakfast table; when, however, Freud arrives the third chair is occupied by the husband's overcoat. Freud argues that

the coat has been placed there automatically, as the expression of a concealed feeling that the professor's society is no longer welcome. That is possible, but it is also true that, in the absence of any kind of feeling, conscious or unconscious, the husband, with thoughts centred on his newly-arrived wife, might still fling his coat on the one available chair. I go to a locked drawer and automatically select from the bunch the wrong key. There is a reason for that wrong selection. But the reason is not, as Freud might be inclined to suppose, any secret emotion or desire, sexual or other; the wrong key I have automatically selected simply happens to be the key that I have lately most frequently required,—that is to say, my action has been determined by the general tendency of nervous action to flow in the direction of least resistance, in the channel formed by habit.

Thus automatic actions are not always due to latent specific causes, but often to latent general causes. And in every particular case we have the problem of deciding between the possible specific cause and the perhaps more probable general cause.

Such criticism, however, by no means destroys the interest and value of Freud's work, which cannot fail to be attractive to those whose business it is to search beneath the surface of human speech and human conduct for underlying causes.

HAVELOCK ELLIS.

*Premiers Mémoires de Séguin sur l'Idiotie* (1838—1843). Publiés par BOURNEVILLE, Paris, 1897. 8vo. pp. 182.

*Traitement moral Hygiène et Education des Idiots et des autres Enfants arriérés.* Par ÉDOUARD SÉGUIN. Préface par BOURNEVILLE. Paris, 1906. 8vo. pp. 530.

In the first of these books we have the earliest writings of Dr. Edward Seguin explaining the methods of teaching which he employed for the training of idiots in the Bicêtre. A suggestive paper is entitled "Advice to A.M.O. on the Education of his Son," and also a larger one on "The Education of Backward Children and Idiots."

In the second and larger volume we have a reprint of Dr. Seguin's French work on *The Hygiene and Education of Idiots*, first published in 1846.

Dr. Bourneville announces that he will bring out a volume containing reports and memoirs by Seguin from 1846 to his death in 1880, and a translation into French of his book *On Idiocy and its Treatment by the Physiological Method*, New York, 1866. It is by this book that Seguin is known to readers in the English language, and it includes the best ideas of the preceding ones.

Leaving France in 1850 for the United States, with his great talent and marvellous enthusiasm, Dr. Seguin gave a powerful impetus to the establishment of training institutions for idiots in the New World. This was the main object of his life. He practised for some time as a physician, and wrote a good book on *Medical Thermometry*, but his last years were spent in establishing, along with his second wife, in New York City, a training school for feeble-minded children.

Since the publication of his last work there have been advances in the pathology of idiocy, but his writings still deserve study for his able clinical observations and his acute analysis of mental symptoms.

The principles of education laid down by him in different treatises are still the basis of all teaching of the feeble-minded, and, indeed, are useful in ordinary pedagogy. The ingenuity of his methods, his skill in teaching, and his indomitable perseverance are beyond all praise. Like most enthusiasts, Seguin advanced beyond the strain of ordinary endeavour; he was willing to bestow his efforts to arouse the most torpid mental faculties. Utterly unselfish, he would not have sought a fitter memorial than this republication of his labours which will still carry on his life-work. These writings will be read with much profit by all who are engaged in the teaching of the feeble-minded.

Much praise is due to Dr. Bourneville for including these works in his *Bibliothèque d'éducation spéciale*. This distinguished physician has done a great work for the benefit of idiots and imbeciles by his vigorous revival of the training at the Bicêtre, and by his numerous and valuable contributions to the pathology of idiocy.

WILLIAM W. IRELAND.

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## Epitome of Current Literature.

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### 1. Physiological Psychology.

*The Theory of Hysteria* [*Hystérie et Sommeil*]. (*Arch. de Neurol.*, May and June, 1907.) Sollier, P.

Sollier here presents a new statement of his theory of hysteria as a form of sleep (first brought forward in 1897, and now based on a study of 200 cases), at the same time answering various objections. As before, he maintains the need of a physiological explanation of hysteria as against Janet's psychological theory. But he admits that (as Binet and Ingegnieros have pointed out) his and Janet's theories complete each other rather than stand in opposition, Sollier maintaining that the evolution of a symptom, in however masterly a manner it may be unravelled, by no means constitutes a pathogenic explanation of the disease presenting that symptom. Sollier's definition of hysteria now is "a functional physical trouble of brain, consisting in a localised or generalised torpor or sleep, temporary or permanent, of the cerebral centres, and translated according to the centre affected by manifestations of a vaso-motor, trophic, visceral, sensorial or motor-psychic nature, and also, according to its variations, its degree and its duration, by transitory crises, permanent stigmata or paroxystic accidents." Confirmed hysterical subjects are thus simply persons in a state of vigil-ambulism, whose sleep is more or less deep, more or less extended; but Sollier now adds that whatever part of the cortex is affected, sensibility, objective and subjective, is immediately and necessarily



affected. "Anæsthesia is the real *sigillum hysteria*." Hysteria being thus a sleep, treatment consists in a process of awakening by means of super-nutrition, functional re-education, mecano-therapeutics, etc. Sollier admits that hysteria is not a normal sleep, so that his definition thus becomes more like an analogy; as he himself says, the sleep of hysteria is more like that of a compressed nerve which, in popular phrase, "goes to sleep."

HAVELOCK ELLIS.

*The Value of Freud's Psycho-analytic Method* [*Die Bedeutung der psychoanalytischen Methode nach Freud*]. (*Cibtt. f. Nervenheilk. u. Psychiat.*, January, 1907.) Sadger.

For the past nine years Sadger has employed Freud's methods of treating hysteria and obsessions. He attaches more importance to the practical side of Freud's doctrine than to his theory, which has constantly developed, and cannot yet be considered to be in a satisfactorily final state. But Freud's central idea, that early sexual experiences have a determining and decisive influence on the later history in congenitally predisposed subjects, seems to Sadger, like Lister's ideas in surgery, to inaugurate a new epoch. Before Freud, hysterical symptoms could neither be understood nor permanently removed; in both respects the psycho-analytic method has effected a change. It will be seen that Sadger is an uncompromising champion of Freud's main idea: "Behind every symptom of hysteria and obsessional neurosis lie concealed a mass of sexual wishes," to some extent stretching back to early childhood, sometimes even to the first year of life. Sadger claims that when hysteria is thus understood, no one who properly grasps the technique of the psycho-analytic method can fail to cure it in every case. In the hysterical we are always concerned, he believes, with what are, fundamentally, childish feelings and desires; the hysterical combine the intelligence of the adult with the logic of a child. The germs of all kinds of perversities are to be found at the roots of the hysterical state, not only (and very frequently) homosexuality, but also traces of sadism, masochism, exhibitionism, fetichism, etc. It has been objected that unconscious suggestion plays a large part in this method. Sadger denies that this is the case, and asserts, on the contrary, that the hysterical are peculiarly rebellious to any kind of suggestion outside that of their own ideas. A more serious objection, he admits, is the difficulty of the *technique* of the method and the length of time required to learn it; he considers that it cannot be completely mastered in less than three years. Under these circumstances it is to be feared that the psycho-analytic method, whatever its merits, will be long in gaining recognition.

HAVELOCK ELLIS.

*The Theory of the Duplex Brain* [*Sur la Symétrie Bilatérale du Corps et sur l'Indépendance Fonctionnelle des Hémisphères Cérébraux*]. (*Arch. de Neurol.*, March—June, 1907.) Bonne, Ch.

In a recent book, Sabatier—setting forth afresh in a very thorough-going and comprehensive manner an ancient theory—has argued that throughout the greater part of the zoological series the entire organism and the consciousness are alike dual, and that simple consciousness is

based on a fundamental double consciousness. This theory, which is both biological and psychological in character, Sabatier terms "duplicism." In a series of four long and detailed articles, Dr. Bonne, of Braqueville Asylum, traverses the entire field and shows that duplicism is contrary to all the data of biology, and also fails to afford any satisfactory theory of the psychological facts it undertakes to explain. He points out that even the concessions made twenty years ago by Ribot as to the possible independence of the cerebral hemispheres under some circumstances are to-day no longer admissible. Dr. Bonne's articles are too closely argued to be easily summarised, but they may be commended to those who may still be inclined to think that the theory of a duplex brain furnishes an easy explanation of complex psychic phenomena.

HAVELOCK ELLIS.

*The Affective Characters of Perception* [*Les Caractères Affectifs de la Perception*]. (*Journ. de Psychol., Norm. et Path., July, 1907.*)  
Waynbaum.

The mental product of perception is a state of knowledge. Besides the intellectual factor, however, perception also possesses an affective factor. This emotional element arises in one of two ways: (1) because the perception is not in harmony with the preceding mental state, and thus enters the mind with a certain shock, or (2) because the perception intrinsically contains an emotional element, the latter being, as it were, carried in from the outside world. As regards the first variety the emotional element disappears with repetition, and varies inversely with the preceding state of preparedness of the consciousness. In this case the emotion is due to a direct action upon the lower centres without the intervention of the higher—it is perceptive-emotional. In the second variety, however, the higher centres are essentially involved, and the process is ideo-emotional. The perception originates an idea, and the idea originates an emotion. The arousal of sympathy is an excellent example of this second type.

BERNARD HART.

## 2. Neurology.

*Remarks on the Investigation of the Ganglion Cells in the Fresh State* [*Einige Bemerkungen zur Untersuchung der Ganglien-zellun in frischem Zustand*] (*Centralbl. für Nervenheilkunde, No. 238.*)  
De Montet, Ch.

After describing some of his methods of staining nerve-tissue, Dr. Montet observes that when an examination of considerable area is to be speedily made it is best to examine the tissues in the fresh state without fixing them in any way. He makes a thin section with a double knife and then stretches the preparation. The object glass should be large and slightly warmed, and the staining solutions carefully dropped upon it. After a minute the covering glass is put on. Under this treatment the form of the nerve-cell is preserved and the Nissl corpuscles come well out. Dr. Montet has found that with this

process of stretching the preparations suffer less change than when subjected to great variations of temperature and osmotic pressure, and that they present the most natural forms. In sections made on frozen tissues, without formalin hardening, the nerve-cells are too much injured. After formalin hardening the colouring by neutral red does not turn out well.

Dr. Montet observes that this method of stretching sections is not adapted to all inquiries nor can it take the place of sections with the microtome. It is most useful when the examiner is pressed for time.

WILLIAM W. IRELAND.

### 3. Ætiology of Insanity

*On the Direct Descent of Hereditary Insanity* [Ueber die Klinischen Formen der Psychosen bei direkter Erblichkeit]. (Centralbl. für Nervenheilkunde, No. 230.) Foerster.

Dr. Foerster has made a diligent inquiry into the history of families in which there was a neurotic heredity. He carefully excluded all cases in which the diagnosis was doubtful and arranged his material into two groups. The first group, consisting of ascendants and descendants, comprised twenty-five families; the second group, consisting of sisters and brothers, comprised thirty-one families. Each of these groups were sub-divided into *a* and *b*, which stands for similar or dissimilar heredity. Group *1a* consists of eleven families in whom the children were born eight times before and three times after the nervous disease of the parents. In Group *1b* out of fourteen families the descendants were born twelve times before and twice after the appearance of the disease in their parents. Group *2a* comprises twenty-three, and Group *2b* only eight families. It is difficult to go into further details without a prolonged abstract. One result comes out that dementia præcox and manic-depressive insanity often occur in direct descent. Only in four families was the hereditary disease more severe with the children than with the parents. In the discussion, which followed the paper, Dr. Thomson stated that in his observations, he found the disease more severe with the children.

WILLIAM W. IRELAND.

### 4. Clinical Psychiatry.

*Writer's Cramp treated by the Method of Ligature* [Crampe des Écrivains guérie par la Ligature élastique]. (Arch. de Neurol., July, 1906.) Hartenburg, P.

The author has systematically employed the method of ligature, originally advocated by Bier for arthritic cases, in various neuromuscular disorders, contractures, spasms, cramps, etc. The results have, on the whole, been satisfactory.

In the case of writer's cramp described in the present paper, the

patient's fingers became immediately rigid whenever he attempted to write. When the case came under the author's care, the condition had already persisted for fifteen years, and numerous methods of treatment had been employed without avail. The patient was directed to tie a piece of indiarubber tubing around the upper arm, the ligature being applied for twenty minutes morning and evening. The object aimed at was the induction of venous stasis. An almost complete cure resulted in two months. The author is of opinion that the effect cannot be ascribed to suggestion, as he only saw the patient once during the whole period of treatment.

BERNARD HART.

*Delusion of Altered Personality* [*Sur un cas de Délire Métabolique de la Personnalité lié à des troubles de la Cœnesthésie*]. *Arch. de Neurol.*, October, 1905.) Deny, G., et Camus, P.

A female patient, æt. 37, was admitted to the Salpêtrière with the following history. As a result, apparently, of prolonged emotional stress, a state of anxiety appeared, with obsessive self-absorption, agitation, weeping, etc. Hypochondriacal ideas of negation then arose, and finally ideas of corporeal transformation. The patient believed herself changed into a dog, a bull, a man—she no longer recognised herself, and bewailed the metamorphosis of her old personality. Limited at first to her physical self, the change gradually involved the psychical self. Similarly the patient's family and surroundings appeared to be changed: her mother became the Virgin Mary, her husband Jesus Christ. In spite of the grandiose character of these delusions, the depression and anxiety persisted. Orientation in time and space was very defective.

The author ascribes the ideas of corporeal transformation to a disturbance of the cortical centres in which are registered the organic sensations underlying our notion of bodily existence. The ideas of transformation are due to a false interpretation of the abnormal sensations experienced by the patient. The disturbance of the cerebral cœnesthesia affects the organic element of the sensorial perceptions, leaving their specific element intact. Hence the patient recognises and identifies persons and things up to a certain point, but maintains that they have undergone some kind of change. The present sensations, moreover, being deprived of the affective element inseparable from their cœnesthetic component, cannot be superposed on those fixed by the memory. Hence the doubts, hesitations, and profound disorientation with regard to time and space.

The above interpretation is simply a development of that already applied to similar cases by Ribot, Cotard, and Séglas.

BERNARD HART.

*Eroticism in an Eunuch* [*Eunuchisme et Erotisme*]. (*Le Prog. Méd.*, Jan. 26th, 1907.) Marie.

This very brief note refers to a case seen by Dr. Marie in Dr. Warnock's asylum at Abbamih. The patient, a slave from Kordofan, æt. about 40, had been completely castrated in infancy. He was congenitally *débile*, and for some years before his admission to the asylum



he had been addicted to the use of haschisch. Under the influence of this intoxication, he developed an imperfectly organised delirium of exaltation, the most remarkable feature of which was its sexual content. He had hallucinations of connection with an invisible princess, from which he professed to experience extreme voluptuous sensation with emission, and he had delusions of vast amorous and procreative powers. Rectal examination showed that the prostate was normally developed and that the vesiculæ seminales were not atrophied. The author inclines to the view that the persistence of these organs may account for the emissions alleged by the patient, the peripheral stimulus being properly supplied by irritation of the urethral mucous membrane. He further emphasises the bearing of the case as evidence of the possibility of psychical erotism independently of the functional aptitude of the sexual organs.

W. C. SULLIVAN.

*Right-handedness and Left-handedness in connection with Functional Asymmetry of the Brain* [*Destrismo e Mancinismo in relazione colle Asimmetrie Funzionali del Cervello*]. (*Arch. di Psychiat.*, vol. xxviii, fasc. iii, 1907.) Lattes.

In this paper, the author considers the question of dextral pre-eminence in connection with the researches which he has recently made regarding cerebral asymmetry in normal and criminal subjects (*vide* 'Epitome,' July, 1907). The conclusions which he drew from these researches were that the usual mode of such asymmetry consists in a predominance in the left hemisphere of the Rolandic and occipital areas, and in the right hemisphere of the parietal lobules and the anterior frontal region, a condition which he interprets as meaning that in the course of evolution there has been a greater development in the left brain of the centres of projection and in the right brain of the centres of association. Right-handedness, therefore, he would regard as simply a functional manifestation of this general tendency to the more extensive development of the psychically inferior centres in the left brain, other instances of which are to be seen in the usual localisation on the same side of the secondary speech centres. An inversion of this arrangement would account for left-handedness so far as concerns its occurrence in otherwise normal persons. In the case, however, of the criminal and the epileptic, in whom, according to the Italian school, left-handedness is extremely common (occurring in from 23 to 30 *per cent.* of such persons), the author has to seek a different explanation, for in his investigations he has failed to find in the criminal brain any such inversion of the convolitional pattern as this view would require. To meet this difficulty he has recourse to a somewhat fanciful theory: arguing from the observation that the convulsive discharge in a large proportion of epileptics is either earlier or more marked on the right side of the body, he takes this to mean that in the epileptic, and therefore, *ex hypothesi Lombrosiana*, in the criminal, there exists a pathological condition of the left hemisphere, in consequence of which its functional activity is lowered, so that right-handedness fails to develop. He distinguishes, accordingly, two types of left-handedness—one, which he terms atavistic and constitutional, being connected with an inversion of the usual

cerebral asymmetry, while the other is the manifestation of a lesion in the left hemisphere. The ascription of any alleged peculiarity of the criminal to a pathological rather than to an "atavistic" source is unusual in the pages of this journal.

W. C. SULLIVAN.

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## 5. Sociology.

*Mentally Abnormal Children in Schools. (Journ. de Méd. de Bordeaux, June 2nd and 9th, 1907.) Regis, E.*

Dr. E. Regis, a well-known writer and lecturer on insanity, has collected much information about the progress of the movement for the education of mentally deficient children throughout Europe. After detailing what has been already done in Switzerland, Holland, Belgium, and Italy for the establishment of special schools, he observes that the organisation of the education of mentally abnormal children in England is well advanced. He presents a table of thirty-one English towns which have special schools, numbering 152 in all, with 7,383 pupils. London alone counts eighty-nine special schools, with 4,423 pupils. He adds that in England these special schools are completed by different institutions designed to give manual education to the children, improve their physical defects, and to protect them when their formal education is over. Dr. Regis does not mention the Royal Commission for inquiry into the existing methods of dealing with idiots and epileptics, and with imbecile, feeble-minded or defective persons under the lunacy laws in Great Britain and Ireland, which has been collecting evidence for two years, and may be expected soon to issue a report. In the German Empire, there are now 150 towns which have 230 *Hilfsschulen* with 660 classes and 15,000 children. He thus sums up: We see that most of the countries of Europe have instituted special classes for the education of abnormal children; some of these classes are attached to the ordinary schools, but most of them are in separate schools, either as out-door pupils, or keeping them for the day, or caring for them entirely. The number of pupils is generally about twenty for each class. In some towns children of both sexes are educated together.

Dr. Regis confesses that France has remained behind in this general movement, but she appears to be awakening. A commission instituted in 1904, and composed of some distinguished men under the presidency of M. Leon Bourgeois, has issued a report which is being embodied in a law to be proposed by the Minister of Instruction. This will lead to the creation of special schools, some attached to the ordinary schools, others for boarders and half-boarders.

In the meantime, the municipalities of Paris, Lyons, and Bordeaux have been taking the lead in trying to associate philanthropists, doctors, and teachers to interest themselves on behalf of these unfortunate children. In Bordeaux, a census has been taken of the children who are unfit to be educated at ordinary schools, and amongst 8,735 male pupils at the public schools 452 were found to be abnormal—that

is, 5·17 *per cent.* Of these abnormal children, 134 were put down as backward (*arriérés*) and 318 as feeble-minded. Dr. Regis proposes to have four special schools in Bordeaux for the 800 or 900 pupils who require such an education. Each of these schools should have a gradation of eight classes. He considers that in France the sexes should be separate. Dr. Regis informs us that in 1904 the Minister for Public Instruction created a Chair for "Abnormal Pedology" in the Normal School for Teachers of the Seine, to which Dr. Gauraud was appointed. Dr. Regis's proposals comprehend the training of teachers for these special schools, and gratuitous consultations for the parents of such children given by physicians specially qualified.

WILLIAM W. IRELAND.

## Part IV.—Notes and News.

### THE MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE sixty-sixth annual meeting of the Association began at 11 a.m. on Thursday, July 25th, 1907, at 11, Chandos Street, Cavendish Square, London, W.; Dr. Robert Jones, the retiring President, occupied the chair.

*Present:* F. Beach, G. F. Blandford, C. H. Bond, D. Bower, A. H. Boyle, J. F. Bristoe, L. C. Bruce, J. Carswell, J. Chambers, W. S. Clapham, T. S. Clouston, R. H. Cole, H. Corner, S. Coupland, M. Craig, J. F. Dixon, T. O. C. Donelan, A. C. Dore, A. R. Douglas, T. Drapes, G. J. Eady, C. C. Easterbrook, F. A. Elkins, J. A. Ewan, R. W. Gilmour, E. Goodall, H. E. Haynes, G. S. Hine, C. K. Hitchcock, G. Johnston, Robert Jones, N. Lavers, H. W. Lewis, A. C. MacBryan, P. W. MacDonald, T. W. McDowall, W. J. Mackeowen, D. McRae, H. J. Manning, M. E. Martin, W. F. Menzies, C. Mercier, J. Merson, W. J. Mickle, A. Miller, C. S. Morrison, D. Nicholson, W. F. Nelis, H. Hayes Newington, Conolly Norman, J. A. Oakshott, D. Orr, L. R. Oswald, M. E. Paul, E. Powell, H. Rayner, W. F. Robertson, J. Round, R. G. Rows, G. H. Savage, J. Scott, G. E. Shuttleworth, R. Percy Smith, J. B. Spence, R. H. Steen, W. H. B. Stoddart, D. G. Thomson, T. S. Tuke, A. R. Turnbull, A. R. Urquhart, E. B. Whitcombe, E. W. White, A. Wilson, D. Yellowlees.

Among the visitors were: T. F. Althaus, W. N. Bullard, W. S. Chisholm, A. J. R. Foulton, A. H. Hogarth, E. Howard, H. M. Hurd, N. Keith, Mrs. Pegler, L. H. Pegler, C. Rolleston, Mrs. H. Soley, E. E. Southard, M. White.

Thirty-six members intimated their inability to be present.

The minutes of the preceding annual meeting were taken as read, confirmed, and signed.

### ELECTION OF OFFICERS AND COUNCIL.

For the election of officers and council the President nominated Dr. Paul, Dr. Goodall, Dr. Maurice Craig, and Dr. Turnbull, to act as scrutineers. The following were declared to be unanimously elected:

<i>President</i> . . . . .	P. W. MACDONALD.
<i>President-elect</i> . . . . .	CHAS. H. MERCIER.
<i>Ex-President</i> . . . . .	ROBERT JONES.
<i>Treasurer</i> . . . . .	H. HAYES NEWINGTON.

<i>Editors of Journal</i> . . . . .	{ HENRY RAYNER. ALEX. R. URQUHART. CONOLLY NORMAN. JAMES CHAMBERS.
<i>General Secretary</i> . . . . .	{ C. HUBERT BOND. ALFRED MILLER.
<i>Registrar</i> . . . . .	{ A. R. TURNBULL. CONOLLY NORMAN. BEDFORD PIERCE.
<i>Examiners for Nursing Certificate</i> . . . . .	{ THEO. B. HYSLOP. D. G. THOMPSON.
<i>Auditors</i> . . . . .	

#### *Members of Council.*

JOSEPH S. BOLTON, THOS. S. CLOUSTON, THEO. B. HYSLOP, GEO. H. SAVAGE, JOHN TURNER, T. OUTTERSON WOOD.

#### *Officers and Council elected by the Divisions.*

*South-Eastern Division.*—A. N. BOYCOTT, C. H. FENNEL, CHAS. A. MERCIER, R. H. STEEN (*Secretary*), ERNEST W. WHITE.

*South-Western Division.*—H. T. S. AVELINE (*Secretary*), F. ST. J. BULLEN, EDWIN GOODALL.

*Northern and Midland Division.*—J. A. EWAN, T. W. MCDOWALL, BEDFORD PIERCE (*Secretary*), DAVID ORR.

*Scotch Division.*—LEWIS C. BRUCE, HAMILTON C. MARR (*Secretary*), A. R. TURNBULL.

*Irish Division.*—W. R. DAWSON (*Secretary*), THOS. DRAPES, M. J. NOLAN.

*Examiners for England.*—MAURICE CRAIG, ROBERT JONES.

*Examiners for Scotland.*—L. R. OSWALD, W. FORD ROBERTSON.

*Examiners for Ireland.*—W. R. DAWSON, WM. GRAHAM.

Dr. Hyslop and Dr. Thomson were elected auditors.

The PRESIDENT, before proceeding with the next business, said it was a pleasure to welcome to the meeting, on behalf of the Association, Dr. Hurd, from the Johns Hopkins University, Baltimore.

#### ELECTION OF STANDING COMMITTEES.

The PRESIDENT then put the list of gentlemen to form the Parliamentary Committee, and it was carried.

Dr. YELLOWLEES desired that the name of Dr. Oswald should be added to the Educational Committee, since he was now Lecturer on Insanity at Glasgow University.

Dr. CLOUSTON seconded, and the amended list was unanimously agreed to.

The PRESIDENT said the names on the Library Committee at present were: Dr. Fletcher Beach, Dr. Rayner, Dr. Outtersson Wood, and Dr. R. H. Cole. All those gentlemen were now proposed for re-election. The names were unanimously agreed to.

#### REPORT OF THE COUNCIL.

The GENERAL SECRETARY (Dr. HUBERT BOND) read this report and moved its adoption.

The Council reports that the number of members—ordinary, honorary, and corresponding—on December 31st, 1906, was 685. This is a decrease by three, as compared with the corresponding figure for the previous year, and is explained by the heavy number of deaths and removals—namely, 37. Thirty-six new members were registered during the year, and five resigned. The following Table shows the membership during the past decade:



Members.	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906
Ordinary . . .	524	540	550	568	580	586	597	620	641	638
Honorary . . .	38	38	36	38	37	37	36	35	32	32
Corresponding . .	12	12	12	10	11	12	12	15	15	15
Total . . .	574	590	598	616	628	635	645	670	688	685

The Council regrets to have to chronicle the deaths during the year 1906 of the following thirteen members: Drs. W. L. Andriezen, C. Angus, F. Hurst Craddock, A. J. Grant, W. H. McCutchan, J. G. McDowell, J. Malony, A. H. Nash, G. H. Pearce, R. S. Stewart, and G. P. Torney. This unusually heavy list has been augmented during the current year by the loss by death of two distinguished honorary members.

The usual quarterly meetings took place in February, May, and November. That in February was, by the courtesy of Dr. A. M. Jackson, held at the Notts County Asylum, Radcliffe-on-Trent, an asylum opened within the last six years, and which afforded the members a very pleasant visit. At the November meeting an illuminated address was presented to the President in recognition of his long and valued services as General Secretary, which extended over nine years. Eleven divisional meetings were held.

The important question of the attitude of the Association towards the proposed union of medical societies has been under further consideration during the year. For weighty reasons the Association has been unable to see its way to join in the newly formed Royal Society of Medicine.

The Educational Committee, under the chairmanship of Dr. Mercier, and the Parliamentary Committee, under the chairmanship of Dr. Ernest White, present their reports, which reflect arduous and valuable work, accomplished and in progress.

In addition to the business of the standing committees, much important work delegated to special committees has been overtaken.

The Statistical Committee continued to act as such until the presentation of their report at the last annual meeting, when the new set of tables were finally adopted. The new year saw the first fruits of their labours in the coming into force of the Lunacy Commissioners' new registers, in which the material to be tabulated will be found conveniently arranged. In readiness for early next year, when the first set of the new tables will fall due, compilation-forms and expansion-tables have been devised and are now obtainable from the printer.

The Classification Committee also brought up their labours to a close at the last annual meeting, and, following the adoption of their report, the new list of insanities is now in general use.

A Workmen's Compensation Act Committee was appointed to deal with some important matters in connection with the new Act, to which the attention of the Association had been drawn by the treasurer.

The Housing Committee, in view of the probably imminent building operations on the part of the Medical Society, is again active.

The Journal continues under the same acceptable editorship, and a satisfactory circulation of it is maintained.

The Library Committee continue their work.

The number of entries for the nursing certificate were not so numerous in 1906 as in the previous year, nevertheless the work of the registrar has been heavy. To him, the divisional and other secretaries, the best thanks of the Association are due.

The PRESIDENT asked whether anyone wished to offer any remarks upon it.

Dr. MACDONALD seconded the adoption of the report, and it was carried.

#### THE TREASURER'S REPORT.

The TREASURER (Dr. HAYES NEWINGTON) read his report and moved its adoption.



Dr. YELLOWLEES seconded, and with special thanks to the Treasurer for the admirable *resumé* in which he had presented the financial history of the Association during a number of years.

The report was agreed to.

#### AUDITORS' REPORT.

Dr. SPENCE submitted the auditors' report, and took the opportunity of congratulating the Treasurer on the way in which the accounts were kept. He thought the Association had a most admirable Treasurer. He proposed its adoption.

Dr. THOMSON seconded the adoption, and it was carried without discussion.

We have examined the accounts of the Treasurer for the year ending December 31st, 1906, and have seen the vouchers, and have found the same correct.

July 24th, 1907.

E. B. WHITCOMBE, } Auditors.  
J. B. SPENCE, }

The TREASURER briefly acknowledged the kind words of Drs. Yellowlees and Spence, and said that the prosperity of the Association must, of course, depend on the energy of the general secretary, the other secretaries, and the members generally.

#### REPORT OF THE EDITORS.

Dr. URQUHART expressed his regret that Dr. Rayner was not present, but the Editors' report was of the simplest possible character. It merely stated that the operations of the Journal had been conducted upon the same principles as heretofore, and that the sales and advertisements had been adequately maintained. He proposed that the report be received.

Dr. CLOUSTON said he had much pleasure in seconding the adoption of the report. As a past editor he thoroughly agreed that the Journal was uncommonly well edited; and it was of great interest, not only to members of the Association, but to the whole medical profession.

Agreed.

#### STANDING COMMITTEES.

##### REPORT OF THE PRINCIPAL WORK OF THE EDUCATIONAL COMMITTEE SINCE THE ANNUAL MEETING, 1906.

A resolution was passed at the Annual Meeting, 1905, to the effect that a preliminary report of the year's work done by the Educational Committee be issued some time prior to the reading of the full report, as is customary at the annual meeting.

The following is a brief account of the work done by this Committee up to, and including, the last May meeting:

The Educational Committee have held many meetings during the year, and have had several important subjects before them for consideration. Amongst other matters the following have been dealt with:

At the request of the Educational Committee the examiners for the nursing certificate conferred together to inquire whether it was possible to improve the method of marking in the written portion of the nursing examination. After duly considering the matter the present examiners have decided that each examiner will hand over to the other examiners his "markings" in case of failures, and that all the candidates' papers will be preserved until after the following examination.

The Sub-Committee *re* Nursing Certificate was re-appointed, and has made a further report to the Educational Committee. This report is still before the Committee, and will be thoroughly considered at the July meeting.

According to the instructions given to the Educational Committee at the last annual meeting, the revision of the *Nursing Handbook* has been begun, and the Committee appointed has had several meetings.

The publishers of the *Nursing Handbook* have been instructed to issue a small reprint of the present edition of the handbook pending the publication of the new edition.

The Sub-Committee *re* Disciplinary Cases have had several meetings, and were present at a conference with the Association solicitor and the counsel selected by him. As a result of the Sub-Committee's recommendation a letter has been drawn up, and will be sent to the medical superintendents, heads of nursing homes, etc. The object of this letter is to advise an employer to apply to the Registrar of the Association to learn whether the name of any nurse applying for employment who states that he or she is a holder of the Association nursing certificate is still on the register.

The Registrar reported that 143 candidates entered, and 102 passed, the nursing examination held in November, 1906.

(Signed) CHARLES MERCIER, *Chairman*.  
MAURICE CRAIG, *Hon. Sec.*

*Continuation of Report of Educational Committee to Annual Meeting, 1907.*

As a general instruction to the Registrar, it has been decided that nurses completing a training of three years in a general hospital containing 100 or more beds, and in which probationers are received and training given, be admitted to the nursing examination under the two-year rule.

As a general instruction, it has been decided that in the case of a nurse losing his or her certificate, application may be made to the Registrar, accompanied by a recommendation from any member of the Association, identifying the applicant as a nurse who has taken the certificate. On receipt of such letter the Registrar be empowered to issue a letter stating that the applicant is on the register.

The Registrar reported that 449 candidates sat for the nursing examination in May, and that 341 were successful (75 *per cent.*).

Four candidates entered for the professional examination in July, and all passed.

There was no candidate for the Gaskell prize.

One essay was received for the bronze medal, but the examiners did not consider it of sufficient merit to award the prize.

Dr. CRAIG read this report, and moved that it be received and adopted.

Dr. MERCIER seconded.

Dr. OSWALD said that at an annual meeting of the Association he asked whether it would be possible to have mentioned in the report as to the nursing examination how many failed in the written portion and how many in the oral. In reply he received a conditional promise that it would be given. No information, however, was given as to whether there was a larger percentage of failures in the written or in the practical portion; but considering the greater importance of the practical as compared with the theoretical, he thought it should be stated. He had a strong belief that a much larger number failed in the written than in the practical, and he did not think that should be. The practical examination was infinitely more important than the written, and he did not think the practical part would be satisfactory until the Council took the matter into its own hands and conducted it, as they conducted the written part. He asked whether it would now be possible to learn the numbers who failed in the practical part of the examination.

Dr. MILLAR (Registrar) said he could say at once that the number of failures in the oral examination was but a small fraction of those who failed in the other. During his five years of office it had invariably been the case that the failures at the paper examination represented practically the entire failures, the others being quite insignificant.

The report was agreed to.

REPORT OF PARLIAMENTARY COMMITTEE.

During the past year the Committee has met six times, and its Lunacy Legislation Sub-Committee twice.

*The Carswell Case.*

The Committee recommended "that the Association should take such steps as it can towards obtaining in any further Lunacy Act relating to England such alteration in the present provision (Section 330, Lunacy Act, 1890) for the pro-



tection of medical men giving certificates as will cast the duty of proving neglect or bad faith on the person bringing an action under that Section." It further recommended "that steps should be taken to secure proper protection to medical men giving certificates in Scotland and Ireland."

*Royal Commission on the Care and Control of the Feeble-minded for England and Wales.*

After meeting representatives of the British Medical Association and finding them in general agreement with our views your Committee resolved that evidence be given to the following effect :

- (1) That two additional Medical Commissioners should be appointed.
- (2) That Assistant or Deputy Commissioners should be appointed in such number as may be required in view of any increased duties that may be imposed on the Commission, the Assistant Commissioners only to visit in the place of Commissioners as and when directed by the Board, and to be attached to the London office and not to any local district.
- (3) That where visits are now required to be paid by two or more Commissioners, a visit by one or more should be sufficient.
- (4) That the Commissioners themselves should alone carry out the ordinary visitation of asylums, hospitals, and licensed houses.
- (5) That the disqualification for appointment as Lord Chancellor's Visitor and Lunacy Commissioner imposed by Sections 158 and 165 of the Lunacy Act, 1890, on certain medical practitioners connected with licensed houses should be abolished.

*The State Registration of Mental Nurses.*

The Committee and Sub-Committee gave much time to the consideration of this matter, which was raised by Dr. Outterson Wood, to whom the Committee is greatly indebted for drafting the letter and petition, and for his history of the movement printed in the April number of the Journal, and which relieves this Committee of the necessity of reporting at length.

The petition forms were returned (signed) promptly in many cases, very slowly in some, and not at all in a considerable number, although it was kept open till June 13th.

The petition, with 8,150 signatures attached, was sent to the Prime Minister on June 13th, 1907, by the Honorary Secretary of the Committee, who called his attention to the fact that the petition had been widely signed, not only by large numbers of the ordinary staff of the various asylums, but in most cases by the medical staff, and in many cases by the members of the asylum committees appointed by the county councils.

*Possible Irish Legislation.*

At the instance of Dr. Dawson, Honorary Secretary of the Irish Division, who came specially to London on two occasions and presented a memorandum on the possible effect such legislation might have on lunacy administration in Ireland, the Committee addressed a communication to the Secretary of State for Ireland on April 7th, which was duly acknowledged.

The text of the communication appears in the April number of the Journal.

*Superannuation of Irish Asylum Officials.*

A memorandum on this subject was received from Dr. Conolly Norman at the meeting on May 16th. It was pointed out that this matter was included (paragraph 7) in the communication recently made to the Chief Secretary.

(Signed) ERNEST W. WHITE, *Chairman,*  
DAVID BOWER, *Honorary Secretary.*

June 19th, 1907.

Dr. BOWER submitted this report for acceptance. It had been in the hands of members, but required slight verbal correction to indicate that the remarks concerning the Royal Commission on the Care and Control of the Feeble-minded were confined to England and Wales. With that trifling correction he moved its adoption.

Dr. ERNEST WHITE seconded, and it was agreed to.

## REPORT OF LIBRARY COMMITTEE.

Dr. FLETCHER BEACH said the Library Committee had not met very lately, and therefore they had not presented a report that day. The books in the library were in good order, and books would at any time be thankfully received from members. He hoped the Association would accept that verbal report. The library did not cost the Association anything, because the interest on the Hack-Tuke Memorial Fund practically paid for the carrying on of the work there. Something had to be paid to the man in charge for looking after the books, and books could now, under certain rules, be sent out to members; *i. e.*, if a member wished for a book, he had to send up the name and to pay the carriage on the book back to the library. He proposed the adoption of that verbal report.

Dr. OSWALD seconded, and asked whether it would not be better if the journals sent in exchange could be available to members. He had recently had occasion to ask for foreign journals, and by the kindness of the editors they were sent. He thought members would gladly avail themselves of the opportunity to see other journals, and therefore made that suggestion in seconding the adoption of the report.

The PRESIDENT said Dr. Oswald's suggestion was a very reasonable one, and he was sure the Library Committee would gladly consider it.

Dr. FLETCHER BEACH said that everything the Library Committee could do would be done to meet Dr. Oswald's wishes.

The report was agreed to.

## REPORTS OF SPECIAL COMMITTEES.

To receive from the Council a communication as to a committee appointed by itself in May, 1907, for the purpose of considering the future accommodation of the Association and its library, and with power to confer with other bodies if necessary. The President said that he was asked to state that the matter had been before the Council that morning. There was a Housing Committee, which was making inquiries into the accommodation proposed to be added to the premises. That committee had had several sittings.

Dr. HAYES NEWINGTON, in the enforced absence of Dr. Percy Smith, the Chairman of the Committee, said it might be within the recollection of those who attended the May meeting that the question to which the President had alluded was then brought forward; and a few words were necessary by way of explanation and history. Some years ago the proprietors of the building wherein they were then thought of extending the accommodation; and as the Association were old tenants they naturally offered, under certain conditions, some increased room which was so much desired for the library and other purposes. That question was hung up for a time by the proposal to form a Royal Academy of Medicine. The Association had not found itself able to join, nor had the Medical Society of London, who were the owners of the premises. Therefore the question between these two latter bodies had come up again, and as time was rather pressing the Council appointed the committee of four or five members to negotiate, and several meetings had been held. The matter was still the subject of negotiation, and it would be undesirable to enter into particulars at that stage. But he could report, on behalf of the Chairman, that the Council had seen fit that morning to re-appoint the same Committee, with power to negotiate, but with no power to accept any proposal without full consent. The notice would not have been on the agenda that day had there not been a chance of the Association being called upon to come to a definite conclusion on the matter. The chance was a small one, but it might have arisen. But as matters now stood the Committee had not been able to recommend to the Council the closing of the matter yet. Therefore action by the annual meeting would have to be postponed. If the Council went far enough to come to any provisional agreement with the Medical Society the question would come up again to receive the sanction of the next annual meeting. No doubt the Council would see fit to give some notice of any proposal to all members. At all events it would be on the agenda paper, so that every member would have ample opportunity to turn the matter over in his mind and come to a conclusion. He

concluded by moving that the action of the Council in re-appointing the Committee be endorsed.

Dr. URQUHART seconded.

Dr. CLOUSTON pointed out that part of the resolution was "to take such action on the Council's communication as may be deemed to be expedient," and asked if that meant that the Committee virtually had power to commit the Association to the expenditure of any amount per year for extra accommodation.

Dr. NEWINGTON said it was a notice to the Association itself to take such action.

Dr. CLOUSTON said, in that event, the words "by the Association" should be added after "expedient."

The PRESIDENT said he thought that was guarded against in the Standing Orders. The Association had power to spend only £10 without coming to the meeting.

Dr. BOWER said he did not think those two lines were included in the main resolution.

Dr. NEWINGTON said the annual meeting was asked to receive from the Council a recommendation. The second portion was to ask the annual meeting to take such action on it as might be deemed expedient, should it be found desirable to propose action. But there was not yet anything of that nature before it.

Dr. CLOUSTON said he was satisfied. It was merely that he had had a doubt in his mind.

#### REPORT FROM THE WORKMEN'S COMPENSATION ACT COMMITTEE.

Dr. NEWINGTON said he had, as chairman of the Workmen's Compensation Act Committee, to present their report. It would be remembered that at the last general meeting in May a statement was made by himself on the possible effects of the Workmen's Compensation Act, and it seemed to him and the members of the Association generally that some steps should be taken to see that the public did not suffer at the hands of the insurance offices from ignorance of the actual facts. The Committee of the Association had taken a considerable amount of trouble in getting returns, and it desired to thank cordially all those superintendents who had been kind enough to help them, as the great majority had done. A confidential statement had been circulated, and he thought the effect of the Committee's work had been satisfactory. At all events, as was now well known, the bottom was knocked out of the excessive demand which was made in the first instance by insurance offices. The insurance could now be effected at rather reasonable rates, and the Committee claimed to have done something in bringing that about. It also undertook to bring the question before associations and corporations of nurses, because serious mischief might easily arise from an accident arising in a private house to a nurse who had not been insured by anybody. The Committee were informed that the onus would then fall on the head of the house. There might be some doubt about that. But anyhow, supposing the head of the house had the necessity to pay, say, £500 for a permanent injury to a nurse, there would be a great outcry, and it would be asked how it came about that, without any warning, such a source of danger was brought into a private house. It would follow as a necessity that medical men, especially those who consulted on insanity, would advise that a nurse should be never taken into a house unless some steps were taken to have her or him insured. The Committee found that several of these bodies had taken the view that the nurse should look after herself, but, as the result of the Committee's representations, the principal Corporation had written a rather nice letter, saying that in consequence of the Committee's advice it had insured all its nurses. One or two other bodies had also, he thought, adopted the Committee's advice. Returning to asylum risks, the Committee wished most emphatically to repudiate the idea that in contesting the extravagant notions of the insurance offices it was depreciating the actual risk that was run in asylums. The figures given showed that the risk existed substantially, and was in some cases exceedingly serious.

Dr. MACDONALD seconded the report of the committee. The thanks of the meeting and of the whole Association were due to it for its great energy and hard work, and for the private information circulated.

Dr. BOWER confirmed these remarks. The Asylum Committee, on which he sat,

postponed the whole question until the committee of the Association had done its work.

The PRESIDENT said that the Council had considered the report before the annual meeting and all agreed that there was a tremendous amount of work represented in it, and they specially thanked Dr. Newington for the trouble and interest which he had taken in the subject. It must be of very great importance to the administrators of asylums to know exactly how the risks stood.

The PRESIDENT then said that a very special subject was dealt with by the Council that morning. All the members had had circulated to them the Report of the Parliamentary Committee, in which occurred a particular paragraph, commencing, "The Committee recommended that the Association should take steps," etc. This referred to a member of our Association, and all other members felt great sympathy with Dr. Carswell, and he thought it would be well to ask that gentleman to state what he wished to bring before the annual meeting of the Association. The Council felt so strongly on the matter that they had asked Dr. Clouston, who had taken special interest in the subject, to bring a special recommendation to the Association at that meeting.

Dr. CARSWELL said the questions which had arisen in connection with the case that he had had an unfortunate association with were, mainly, two. The first of those, relating to civil actions, was dealt with in the report, which was in the hands of members; and he supposed he might take it—at least he read the report of the Parliamentary Committee to mean—that if adopted by the Association members were free to consider what steps might be taken to give practical effect to the recommendations of the Association for the protection of the medical man against civil actions. And he supposed that the subject might come up again through reports from the Scotch and Irish sections. Personally, he had been forced to give the question of civil procedure against medical men for the granting of certificates very close and serious attention, and he had come to the distinct conclusion that anything short of making a demand for full protection would weaken their position. He was aware that to ask that the profession should be placed in exactly the same position as a trade union—which had been put outside the common law by legislation which followed upon the Taff Vale decision—was quite impossible, because they had not got the votes to return Members of Parliament who would secure what his hearers regarded as an act of justice. It seemed to him a very extraordinary position that the public, in the lunacy legislation for their own protection, had laid upon the profession the duty of certifying people before they could be put in asylums, and the public had taken no risks at all, but had passed on the entire risks to the profession. It was to save the public from being shot, being murdered, or being maimed, that the lunacy legislation was framed. And the public, under that legislation, took no responsibility whatever. That he regarded as not at all a fair bargain. When the public sought to restrain criminals, and even petty offenders in the way of drunkards, etc., they placed the duty of laying them by the heels on the magistrate and others, but those magistrates were not rendered liable to civil action. And he thought the profession had good cause for making out a very strong position in asking for some protection which would not be merely imaginary, but would be a real and substantial protection. What steps were necessary to secure that would require further and careful study. But, from the public point of view, a more serious series of questions had arisen by the ultimate proceedings in connection with the man William Purvis. It would probably be within the recollection of most of those present that that man was tried before the High Court at Glasgow, and that the Crown, following the precedent of a case which had been tried in Edinburgh before the Lord Justice General of Scotland, set up the plea of insanity, the result of which was that the defence was in the peculiar position of trying to prove an indictment against the accused, and the Crown was in the equally peculiar position of trying to prove the innocence of an accused person. That course was followed in consequence of a precedent set up in what had come to be known as the Cumnock poisoning case, where five judges of the High Court of Justiciary ruled that the question of insanity in a trial might not be tried by a judge, but might be passed on to the jury along with the merits of the case. The result had been a considerable bewilderment in the public mind as to the precise position of lunacy in criminal procedure. And while he thought that the course



followed by the courts and by the criminal authorities in Scotland in those two cases had given rise to a good deal of bewilderment, they were open to explanation, if not even to justification. But in any case the state of matters had forced to the front, in Scotland at any rate, the whole question of whether the question of insanity—the insanity of a lunatic charged with crime—should be left to a jury at all, or whether it should be simply in the hands of the judge. He had been told, since coming to the meeting, that to suggest an alteration of that sort was something like suggesting a revolution to the mind of the English jurist; but he would remind his friends in England that they in Scotland were perfectly familiar with the procedure of dealing with the question of insanity by the judge alone, without a jury. The plea of insanity in bar of trial was always tried by a judge without a jury, until the precedent set by the Cumnock case, when the five judges sitting there passed on the question to the jury; but the new procedure had not given satisfaction to the public mind, nor to many even in their own speciality. The question of dangerous lunatics charged with crime was especially provided for in the Lunacy Statutes of Scotland; they went before the sheriff, without a jury. They in Scotland even went further than that, because the sheriff had power to pass on a person charged with crime and said to be a dangerous lunatic to the Inspector of Poor, even without a cognition before him at all. Civil actions in Scotland under the Lunacy Act were taken before a judge without a jury; indeed, the only cases where they had a jury trial and the question of insanity was raised were two, so far as he could remember. One was a cognition before the High Court, which, he thought, had not taken place in Scotland to the knowledge of anyone. It was a most cumbersome procedure. The other case was the ordinary one of a man being charged with a crime when insanity was set up as a special defence. In a recent article in the *Glasgow Herald*, which he knew expressed the views—though not written by that gentleman—of one of the keenest legal minds in the country, the opinion was held that the Purvis case raised the whole question, and that the principle underlying the precedent of trying the case by a judge without a jury, which had been created by Lord Kingsburgh in a previous case—might be expressed succinctly by saying that insanity was not a question of fact, but of opinion. It was therefore a question suitable for decision by a judge, with the assistance of medical experts. It was, said the *Herald*, as difficult and complicated a question, in many cases, as any legal problem; and no one would suggest that legal problems should be left to the arbitrament of a jury. He, Dr. Carswell, therefore said that a case was made out for considering carefully the present practice in relation to criminal procedure where the accused person was alleged to be a lunatic. He was obliged to the Council for allowing him and others to bring the matter forward, because the public mind was keenly interested in the question, and he thought the Association might very well, at the present juncture, review the whole position. He was very glad that Dr. Clouston had undertaken to move a resolution which would, if passed, allow the question of criminal procedure to go to the consideration of Committees. He hoped the Association would see its way to adopt Dr. Clouston's proposal. His own personal view in the case of Purvis was that it was an extraordinary thing that a jury which had been practically charged by the judge to find that the man was insane, found, instead, that he was not insane; at least, that was the decision implied in the verdict, although they did not say, in explicit terms, that he was not insane. At the same time the jury found that he shot without intention to do any grievous bodily harm. The judge promptly said he would take that from no man, and emphatically backed his opinion by sentencing the accused to seven years' penal servitude.

Dr. CLOUSTON remarked that, as the President had so sympathetically said, it was desirable to first express the unbounded satisfaction felt by the members that they had again among them their friend Dr. Carswell, living and well. (Applause.) With regard to the motion which was in his name, he was in the unusual position of having been asked by the Council to move it; therefore it did not come from him "off his own bat," as it were, but in the name of the Council. He could not speak of the Irish law, but all present were aware that in regard to England and Scotland there were two different systems of jurisprudence applicable to insanity, in the case of both civil and criminal actions. It was well known that, partly by the exertions of the British Medical Association and the profession in general, and

partly by their own Association, there was inserted in the last Lunacy Act of England the clause to which the President had alluded. Lawyers said that the clause was all very well, but it might cost as much anxiety and trouble and expense to prove that there was no malice as to prove the main proposition. But, be that as it might, there was no doubt that the English Lunacy Act did afford protection to the members of the profession which it had not previously enjoyed. The only protection which the profession had in Scotland in such cases was, that an action could not be brought against the medical man after twelve months from the discharge of the patient. And the profession was astounded and amazed at the result in what he might speak of as the Carswell trial. At once a number of medical men occupying fairly representative positions asked the Lord Advocate to see them, and he did so one morning. He (Dr. Clouston) was deputed to act as spokesman, and he put before the Lord Advocate the harshness with which the profession in Scotland was treated. The Association would excuse him for having also said it was a shame that they in Scotland should be exposed to those risks when their English brethren had almost no risks whatever. The Lord Advocate shook his head, and said Englishmen had also risks. But he practically undertook that if there was any chance of bringing in a bill to put Scotch medical men on, at all events, an equality with Englishmen, he would certainly see that it was done. That was what the Association desired, in the first place, with regard to civil actions. That was neither the time nor the place to further expound the criminal law in regard to insanity, in either Scotland or England; but so far as Scotland was concerned, as Dr. Carswell had so well said, they were absolutely in a state of chaos. After the Cumnock trial he wrote a letter to the *Scotsman*, putting the matter from the medico-psychological point of view, and entirely endorsing the position taken up by the Lord President of the Court of Session. The result was that, with the exception of a few medical friends, the letter was universally condemned in Scotland. People said he had written nonsense, and dangerous nonsense at that. The lawyers and the public said that it seemed an unjust thing to try a man for a crime and then, before he was proved guilty, to find him insane and send him to a criminal lunatic asylum for life. The precedent of the Cumnock trial was promptly reversed in the trial of Purves for shooting Dr. Carswell, but there was greater confusion still. In regard to the whole question he said to the President and to every man present that they ought to go to their friends and say to them: "For Heaven's sake join a defence association promptly, before to-morrow." The resolution he had to propose was: "That it be remitted to three committees, representative of the three parts of the United Kingdom, to consider the present practice in criminal procedure in relation to the question of the alleged insanity of accused persons, and to consider whether any alteration is advisable, and to report, with any suggestions that they may consider expedient, to the next annual meeting of the Association." If that resolution were passed there was no doubt that those committees would have to consult lawyers as well as doctors. If such committees were appointed they in Scotland would endeavour to get access to some of the judges, to some of the senior counsel, and also, as far as possible, to ascertain public opinion on the matter. He proposed that resolution, and would like at the same time to nominate the Scotch committee—his English brethren would excuse his doing that first. The English members must nominate their own committee, and the Irish members theirs. He proposed the names of Dr. Carlyle Johnstone, Dr. Carswell, Dr. Urquhart, Dr. Oswald, and himself to represent Scotland. He had no doubt that a gentleman from South of the Border would nominate the English committee. But perhaps it would be more convenient to move the resolution first, leaving the nominations until afterwards.

The PRESIDENT said it would be much better to deal with the resolution first.

Dr. RAYNER seconded the resolution.

Dr. MERCIER said there could be no two opinions on the subject under discussion among members of the Association, nor scarcely in the minds of any reasonable men, that in the two actions which together composed what had been called the Carswell case a gross injustice had been done. Dr. Carswell had suffered undeservedly for merely doing his duty. He had suffered very severely, and his persecutor, though it was true he was now being punished, was punished, apparently, as a sane man, and there was no sort of protection to Dr. Carswell or guarantee that when that man was liberated he would not repeat the act which he

had already done. The present state of affairs in that regard was intolerable, and something must be done, and done promptly, by the Association in order that such proceedings might not be repeated. When he looked at the terms of the resolution, however, he found that they did not completely cover the case that the Association had to deal with. The terms of the resolution were that "it be remitted to three committees, representative of the three parts of the United Kingdom, to consider the present practice in criminal procedure in relation to the question of the alleged insanity of accused persons, and to consider whether any alteration is advisable, and to report, with any suggestions that they might consider expedient, to the next annual meeting of the Association." That, however, covered only part of the ground. The main stress laid by both Dr. Carswell and Dr. Clouston was upon the fact that medical men in Scotland had not the protection in signing certificates and in carrying out the proceedings under the Lunacy Acts which existed in England. That matter was not covered by the resolution at all.

Dr. CARSWELL said it was understood that that was covered by the report of the Parliamentary Committee, which was in print, but which might be more conveniently embodied in that resolution.

Dr. MERCIER said it seemed to him that while the committees were considering one question it would be very expedient indeed that they should include the other, and that what recommendations they had to make should cover the whole ground, and should regard not only the mode of dealing with accused persons, but also the question of the protection of medical men. The question was a legal one, and, as Dr. Clouston had already said, it would require the assistance of legal authorities. It was clear that no committee which could be formed out of that Association would be able to lay down precisely what was the present practice in criminal procedure in reference to the question of the alleged insanity of accused persons; and Dr. Clouston proposed that eminent legal authorities should be approached, and, as he gathered, influenced in their favour. But he would go further than that. He thought that before they could know the facts with accuracy it would be necessary to empower those three committees to obtain legal assistance in order to ascertain the facts; that they should have access to the legal authorities, not for the sake of influencing them favourably, but for the purpose of ascertaining the actual facts, and in precise terms. To do that he thought it would be necessary, almost, to have a lawyer sitting on the committee, or at any rate, that the committees should be able to consult with him, or with some reliable authority, so that the facts of the case might be precisely before the committees before they made their report. It had happened in trials in this country that that protective clause in the Lunacy Act which was supposed to give protection to, or to confer immunity on, medical men from persecution, had been pleaded, and in such a case more than once it had happened that the judge had completely overridden and disregarded that clause. The Act of Parliament laid it down that an action could not be brought after the lapse of a certain time, and it had been shown in a case in which the action was brought after the lapse of that time that the clause could be pleaded, and was pleaded, and yet the judge allowed the action to proceed. There was another condition also; he forgot at the moment its precise terms, but it was equally stringent, which it was necessary the plaintiff in such an action should fulfil. In an action which was tried it was not fulfilled, and yet the action was allowed to go on. And then, of course, as had been noticed in the report of the Parliamentary Committee, the onus of proving that the defendant acted in good faith and with reasonable care, was thrown upon the defendants. Of course the contention of the Association was that the onus of proof that he did not act with reasonable care and good faith ought to be thrown on the plaintiff. And that made all the difference. It was a fine legal point, which any lawyer would understand, and which, from want of knowledge of a legal character on the part of the persons who urged the insertion of the protective clause in the Act, was inserted in the form in which it now stood. If legal advice had been taken on that occasion the protection of the medical man might have been complete instead of ineffective. There was a section in the Act which allowed, in this country, an action to be stayed by application to a judge in chambers. And if such application was made on the ground that there was no reasonable cause for alleging want of good faith or want of reasonable care, in that case, again, the onus of proof lay upon the defendant, not upon the plaintiff. It seemed



to him that in all those cases the onus should lie on the plaintiff. That would place the defendant in a very much more favourable position in any future legislation and any recommendations which those committees might make, and he heartily concurred in the proposal for their appointment. He hoped the points which he had mentioned would be well considered.

Dr. CLOUSTON asked the leave of the President and of the meeting to meet the very proper suggestion of Dr. Mercier by adding after the words "accused persons," "to consider also the practice in civil procedure following upon the carrying out of the Lunacy Acts by medical men." The resolution would then proceed, "and to consider whether any alteration is advisable, and to report, with any suggestions they may consider expedient, to the next annual meeting of the Association." He was quite willing, and he was sure Dr. Carswell would also be willing, to carry out the suggestion so properly made by Dr. Mercier.

Dr. URQUHART said he thought what was intended was that the paragraph in the Parliamentary Committee's report should be incorporated with what Dr. Clouston previously moved—that the committee recommended that there should be protection for medical men giving certificates, such as would cast the duty of proving neglect or bad faith on the person bringing the action under that section, and further recommended that steps should be taken to secure protection to medical men giving certificates in Scotland. Some such wording as that was required.

Dr. MERCIER replied that that was not enough. The giving of certificates was not the only act which medical men had to perform under the Act of Parliament. Actions were frequently brought against persons who had had care of lunatics, but who had not given certificates. He preferred that the words suggested by Dr. Clouston, or in some similar purport, should remain. Or he would agree to more general terms.

Dr. CONOLLY NORMAN wished to support the resolution as moved by Dr. Clouston, with the amendment which he had made. Before entering into any details he might perhaps be allowed to join with all the previous speakers in congratulating Mr. Carswell on being able to be present among his fellow members, and to express his admiration for the modest and telling statement with which he had introduced the subject. The Irish law was founded upon the English in those matters, and Irishmen were liable to the same dangers which formerly assailed the English medical man in relation to lunacy cases. The recent Act, by which the Englishman was afforded a certain amount of protection, did not extend to Ireland, so that Irishmen were in the condition of the primitive English. As in Scotland, according to what they had heard that day, and as he believed occasionally occurred even in highly advanced and civilised England, the law in Ireland was occasionally made for the purpose by the judges as they went along. So that on one occasion where an action was taken against him and against the medical man who had signed the certificate of a patient who was admitted to his asylum the judge summarily dismissed the action against Dr. Norman for having received the patient, and against the medical man who had signed the certificate, by stating that their action was privileged. The judge was a highly eminent judge, whose opinion every one respected. Dr. Norman was satisfied that there was nothing to prevent some of his brethren reversing that remarkable decision to-morrow or the next day. Therefore for personal as well as general reasons he was very glad to support the resolution.

The PRESIDENT said that, as Dr. Clouston remarked, it was a most important resolution. The Council thought it was so important that Rule 95 was brought in to deal with it; the President read the rule to the meeting. The resolution which had been read by Dr. Clouston had the full approval of the Council. Dr. Clouston had rightly referred to the cost, and it was only fair that the Association, assembled at the annual meeting, should have some say with regard to the limitation of cost. Therefore he would ask the Treasurer to add his quota of criticism to the resolution.

Dr. HAYES NEWINGTON said he had intended to ask a question about the cost, and also concerning the matter being dealt with by three committees. Why should there not be one committee with three lobes to it? Otherwise it was possible that two committees might want one form of procedure while the third one might want another, and it would be a little trying to the annual meeting to have to decide between them. If three sections representing the whole committee could meet



before the next annual meeting it might very likely result in the presentation of a co-ordinated report, and he suggested that it should take that form. And he was intending to ask how far it was proposed the matter should be taken. It was not known whether it would be necessary to take legal opinion, but if so, it might be necessary to go to the House of Lords in order to settle between themselves what the law was. *Prima facie* they felt sure that the shoe was pinching somewhere, and it was for the Association to say that it was pinching and where the pain was felt, rather than to ascertain how it was that the shoe came to pinch at all, and how the disability was to be removed. The matter was a very complicated one, and it seemed to him they ought to say what they wanted, and having agreed, as an association, what they wanted, then to put the question before the lawyers, for them to carry out as best they could. Was there any necessity to take high legal opinion before bringing the subject up at the next annual meeting? If so, he thought it was necessary to have a special motion involving the expenditure of money. A motion involving the expenditure of £25 might not be made or entertained except at an annual meeting, and two gentlemen had already spoken of the necessity for taking legal opinion. He bowed to their opinion, but they should state to what extent they proposed to go, and what the probable cost would be, so that the Association might know how far it was involved.

Dr. RAYNER said the work which the Association was proposing to undertake was practically voluntary, and perhaps legal opinion could be obtained by inviting representatives of legal societies to join in the work and meet the Committee of the Medico-Psychological Association.

Dr. MORRISON said that, except for Dr. Mercier, who had very properly pointed out the fact, the speakers did not fully appreciate that the resolution was to deal with criminals, and to place the criminal in some different position from that which he occupied in the past. To allege insanity in the case of a person charged placed the onus of proof on the defendant. No doubt, as Dr. Mercier pointed out, it was a very unfair position to place the defendant in, for instance, under the following circumstances: A man committed a crime, and the Home Office was appealed to on the plea of insanity in regard to the responsibility of that man. A report favourable to the person may have been given to the Home Office; but at the trial the prosecution never produced the evidence which was in favour of the prisoner, but allowed the defendant to bring such evidence as he might be able to get at the last moment, without knowing fully the facts already known to the Crown. Then, in the case of the poor criminal, the judge called upon a junior counsel—insufficiently instructed—to defend the prisoner—

The PRESIDENT reminded Dr. Morrison that the question was the appointment of the Committee, and he asked him to confine his remarks to that subject.

Dr. MORRISON said he was speaking to the resolution in favour of a Committee.

The PRESIDENT said it was necessary that Dr. Morrison should confine his remarks to the appointment of a committee for the three portions of the Kingdom. The President then put it to Dr. Clouston whether he would admit a variation of his wording to the effect that there should be one committee, with representatives of the three countries, rather than three separate committees.

Dr. CLOUSTON said that he and his second were in the hands of the meeting as to what plan would be most efficient for bringing about what was desired. There must at least be three subdivisions of the committee.

Dr. CRAIG asked whether the question of the expenditure of money for the purpose had been settled. It was the fault of the medical profession itself that it had not more protection than was at present the case, nor as much as it used to have. Up to the passing of the Medical Act of 1858 he believed that every medical man was protected against everything he did, medical or surgical, and it was only when he asked for leave to be able to sue persons for his fees that that protection was taken away from him. As the Treasurer said, a large principle was involved, and it might be a very expensive business before it was finished with. It was a question whether the principle should not be settled before appointing the committee or settling what it must do.

The PRESIDENT said he thought it was agreed that there should be a committee. The expenditure could be discussed later. He would like to hear any views as to the appointment of the proposed tripartite committee. He asked whether

Dr. Clouston accepted the suggestion that it should be one committee with three sections.

Dr. MORRISON rose, on a point of order, to point out that the resolution had not yet been put to the meeting. That was the point in reference to which he had been called to order.

The PRESIDENT replied that it had been put, but had not yet been carried. The amendment had not yet been accepted, but if it was he would put it as a substantive resolution. But before that he invited further criticism.

Dr. CARSWELL asked, as a point of order, whether, if the Association appointed one committee with three subdivisions, that implied that the reports of the three subcommittees would require to come before a general meeting of the whole committee and be passed on by them to the annual meeting of the Association. That would be the only natural course; but it would involve a journey, probably to London by the Irish committee and the Scotch committee. And for what purpose? Practically for no purpose, because the law was so different in the three countries. After the questions had been thrashed out in the minds of the members of the committee there was nothing to be gained by bringing those members to London to discuss the matter all together.

The PRESIDENT said he did not think it followed that they should be in London or anywhere else. A meeting would be held in the provinces shortly, but he thought it was desirable that the three divisions of the subcommittee should meet as a general committee.

Dr. THOMSON said the diseases might be all different, but the remedy wanted was the same.

Dr. CLOUSTON said he was willing to alter the resolution—and he believed that in that Dr. Rayner concurred—to a remission to a committee to consist of representatives of the three parts of the United Kingdom, which meant the three countries. He asked how much money the committee would be entitled to spend without coming to the Association for the ordinary printing and such routine expenditure?

Dr. HAYES NEWINGTON said he did not think there was any limit to the expenditure of a committee in that direction. It had been held that the natural expenses of a committee, such as for the agenda and reports, did not come within the rule as to expending £10; the limit was for outside work, such as consulting a lawyer.

Dr. CLOUSTON said they did not contemplate having to pay lawyers' fees at all. He thought he could speak definitely for members of the Bar in Scotland. Very representative men would take sufficient interest, from a jurisprudence point of view, to act as all present were acting, without making any charge.

Dr. SPENCE said he strongly supported the idea that a general committee should be appointed, equally representing the three countries, and with power to discuss the matter from the point of view of the country which they represented. He thought it was hardly necessary they should meet again, but their views might be brought together and homologated, and then presented to the Association at another meeting.

Dr. HAYES NEWINGTON said he had a further suggestion to make. If it was the wish of the Association to appoint one committee with three sub-divisions, it should, in passing the resolution, include the chairman and secretary of the committee.

Dr. CLOUSTON thought it would be better for the committee itself to choose those officers.

Dr. HAYES NEWINGTON said it would involve a meeting in London to set the machinery at work. But if a meeting had to be held in London, unless it were held on the following day, it might be months before the committee would get together.

The PRESIDENT said that Rule 82 stated, "Every committee, at its first meeting, shall forthwith appoint a chairman and a secretary." He thought there had been sufficient discussion on the matter, and he would therefore put it to the meeting. It seemed to be agreed that there should be one committee with three divisions.

The PRESIDENT read the resolution, as follows: "That it be remitted to a committee representing the three parts of the United Kingdom to consider the present practice in criminal procedure in relation to the question of the alleged insanity of accused persons. To consider also the practice of civil procedure following on the carrying out of the Lunacy Acts by medical men; and to consider whether any

alteration is advisable, and to report, with any suggestions that they may consider expedient, to the next annual meeting of the Association."

Agreed.

He said the next question was the nomination of members of the committee.

Dr. CLOUSTON said that, in order to expedite business, he had nominated the Scotch representatives, as follows: Drs. Carswell, Carlyle, Johnston, Urquhart, Oswald, and himself. He proposed that the committee should number fifteen—five representing each country.

Dr. ERNEST WHITE seconded.

Agreed.

The following gentlemen were nominated to act as the English section: Dr. Craig, Dr. Ernest White, Dr. Newington, Dr. Mercier, and Dr. Savage.

Dr. CONOLLY NORMAN suggested, as the Irish representatives, Drs. Dawson, Nolan, Drapes, James John Fitzgerald, and himself.

These names were then put to the meeting and agreed to.

The PRESIDENT then asked the Treasurer to speak on the question of expenditure.

Dr. HAYES NEWINGTON said it was rather for the gentlemen to say what they wanted. The Association had £1100 accumulated in stock and cash.

Dr. CLOUSTON suggested that the question of expenditure should be left alone. The mere fact of the committee being appointed by the Association enabled them to incur the ordinary expenditure for printing and postages, and for any extraordinary expenditure the Treasurer was empowered to go up to £25.

This was agreed to.

Dr. MERCIER said it should be made clear whether that £25 was included in the ordinary expenses of the committee or was outside it.

Dr. NEWINGTON replied that it was beyond the ordinary expenditure of committees.

#### ELECTION OF MEMBERS.

The PRESIDENT said that the Council had proposed for election as an honorary member Professor Leonardo Bianchi, of Naples. He had been proposed by six members of the Association, and needed no introduction. Dr. Ferrari, of Bologna, was also up for election as a corresponding member.

After the ballot the PRESIDENT announced that all the members proposed had been duly elected.

The following candidates were unanimously elected:

As an honorary member, Professor Leonardo Bianchi, Naples, who, since 1896, had been a corresponding member (recommended by Robert Jones, A. R. Urquhart, William W. Ireland, James H. Macdonald, R. Percy Smith, and C. Hubert Bond).

As a corresponding member, Dr. Giulio Cesare Ferrari, Director of the Instituto medico - pedagogico Emiliano, at Bertalia, Bologna, Italy (recommended by William W. Ireland, James H. Macdonald, R. Percy Smith, and Robert Jones).

As ordinary members, Geoffrey Clarke, M.D.Lond., Second Assistant Medical Officer, London County Asylum, Long Grove, Epsom (proposed by C. Hubert Bond, John R. Lord, and H. Hayes Newington); William Norwood East, M.D.Lond., M.R.C.S., L.R.C.P., Deputy Medical Officer, H.M. Prison, Brixton (proposed by James Scott, James Chambers, and John Baker); Thomas Guy Macaulay Hine, M.A., B.C.Cantab. (proposed by P. W. Macdonald, Hubert Bond, and J. W. Miller).

#### DR. CLOUSTON'S MOTION REGARDING DATES OF MEETING.

Dr. CLOUSTON proposed the motion standing in his name in the agenda, as follows: "(1) That the meetings of the Association and those of the Council shall in future be held on Tuesdays; or, if that be not carried: (2) that the May meetings of the Association be held on Tuesdays." He said he did not think the motion needed any recommendation. He could see no possible objection to meeting on a certain day in the week, which enabled members to put down their engage-



ments beforehand. The reason for the resolution would be clear. Edinburgh was 400 miles from London, and Perth and many other places were further; and that journey had to be accomplished and paid for by the Scotch members. There was a most convenient arrangement in regard to week-end tickets, which members naturally wished to take advantage of, and no one in the room would wish to say them nay. The Secretary had issued a supplementary circular on the points, and he would be glad if the meeting could be given some statistics.

Dr. BOND said that ninety-five replies had been received out of a total membership of about 700. Thirty-nine of them were from the South-Eastern Division, fourteen from the South-Western, twenty-five from the Northern and Midland, fifteen from Scotland, and two from Ireland. The card gave four methods of reply; (a) I prefer the present usual days; (b) Willing that the meetings of the Association and those of the Council should in future be held on Tuesdays; (c) Willing that the May meetings of the Association should in future be held on Tuesdays; (d) other suggestions. Seven replied under (a). Sixty-three were willing that the meetings of the Association and Council should be on Tuesdays. Twenty-two were willing that the May meetings of the Association should be held on Tuesdays. Only three made any other suggestion.

The PRESIDENT pointed out that only 13 *per cent.* had sent in replies, and whatever day the Association might fix would not be convenient to all.

Dr. NEWINGTON said he had much pleasure in seconding Dr. Clouston's motion. He reminded members that some years ago a similar postal vote was taken, which resulted in Thursday being chosen by a considerable majority. That was in the old days, when there was not half the important business which was now done. Instructed by the Council he had tried to get the various railway companies to accept the principle of granting week-end tickets from the outside towards London, but without success. All the big railway companies issued week-end tickets cheaply from London to places on the coast, but they could not be induced to reverse the process. But the lines running from Scotland did give that privilege, and the members might well enable their brethren to accept it, to the saving of their pockets.

Dr. MERCIER said that whenever the question of the settlement of days of meetings came before the Association he had raised his humble protest against any one day of the week being fixed permanently for all the meetings, because it was manifest, if it were so, that someone must be always excluded. There must be certain persons who could never attend the Association meetings at all if they were always held on a certain day of the week, as it was notorious that Asylum Committee meetings were fixed for different days in the week, different places having different days. Whatever day might be fixed could not cover every member of the Association. By all means he would agree to the majority of the meetings being held on Tuesdays, or any other day which might be thought desirable, but he thought there should be some relaxation of the rule, so that every member should have an opportunity of attending the Association meetings without very great personal inconvenience.

Dr. CLOUSTON said he could quite see Dr. Mercier's argument, and he would quite agree to the majority of the meetings being held on Tuesday if it met with the approval of the Association generally. After all, it was a matter of personal convenience for those who came from a long distance, and he was sure they would be willing to do anything reasonable.

Dr. YELLOWLEES said he was supposed to be interested in the matter, but he had not been able to see the advantage which Dr. Clouston had discovered in the scheme. It meant keeping men longer from their asylums, and if the meetings were held on Tuesday they must travel home by night trains. It would demand that some of the meetings must be held on Monday. So it was manifest that expense would not be saved if it meant a day longer in town. He had not been able to see any advantage to Scotsmen in the suggested alteration, though he did not wish to make any move against it, since others seemed to desire it.

Dr. CONOLLY NORMAN wished to support the idea which had been mentioned by Dr. Mercier, in consequence of which he understood the resolution had been modified. The fixing of a day for the quarterly meetings prevented some members attending them at all. For example, on the third Thursday in the month his own committee sat, and it was sitting that day, and needless to say he had come away



at great inconvenience. That occurred every quarter, and the consequence was that he might be debarred from attending at any time, except at the annual meeting. Therefore he thought the days ought not to be fixed by resolution.

Dr. BOWER said he thought Dr. Mercier's view might be met by simplifying Dr. Clouston's motion, and he therefore moved, as an amendment, that the May and November meetings of the Association should be held on Tuesday. There were four meetings of the Association in the year. One was the annual meeting, which might be anywhere, the February meeting was held in the provinces, and the May and November meetings were held in London. If these two latter meetings were held on Tuesdays that would cover both Dr. Clouston's and Dr. Mercier's views.

Dr. THOMSON seconded Dr. Bower's motion.

Dr. NEWINGTON said he thought some of the lines would grant a reduced ticket to Scotland on Sunday night, so that an energetic member of Council could start on Sunday night and attend the important committees.

The PRESIDENT then put the amendment that the May and November meetings be held on Tuesdays, for that year only. It was lost, only three voting for it. The amended motion, that the majority of the meetings, including the May meeting, should be held on Tuesday, was then put and carried.

The PRESIDENT said the time had arrived for him to vacate the chair in favour of his successor; but before doing so he wished to announce that, consequent upon the resolution passed in the morning, there would be a meeting on the following morning of the committee which had been appointed for the three portions of the kingdom to discuss and consider the question raised at the morning session.

#### VOTE OF THANKS TO RETIRING PRESIDENT AND OFFICERS.

Dr. MERCIER said it was his pleasing lot to have to propose a vote of thanks to the retiring President and to the Officers of the Association. That was a matter which would not require any insistence on his part. Dr. Robert Jones was a very old friend of theirs; he had been the Secretary of the Association for many years. He had, with remarkable distinction, presided over their deliberations for one year, and Dr. Mercier was sure he would carry the sense of the meeting with him when he said that the Association had never been so prosperous as it had since Dr. Robert Jones took over the secretariat; that the meetings had increased in number and in interest, and the papers read before it had been of high quality and importance. Indeed, the whole Association had been revived, and had new life infused into it when Dr. Robert Jones took over the secretariat; and it had in no wise fallen back since that gentleman had been the Association's President. The Treasurer needed from him no commendation; he had been re-elected to his office this year unanimously and by acclamation. And the auditors had not exactly gone out of their way to refer to the Treasurer, but they had made a particular point of the admirable manner in which the accounts were kept. But the keeping of the accounts was but a small part of the Treasurer's duties. The Treasurer was really the umbilicus of the Association; he was the nucleus which kept it together; he was the nucleus in a biological sense, since without him he thought the whole body would perish—or at all events, without his office, and no one could fill the office better than did Dr. Newington. The Association had had a short experience of Dr. Bond as the new Secretary, but he made an admirable secretary to a very important committee previously, and his services in that connection commended him very much to their suffrages when he was elected General Secretary of the Association. He could say that not only had Dr. Bond not disappointed them, but he had exceeded their expectations, and he had formed a worthy successor to his excellent predecessor, their retiring President. One of the most important officers of the Association was the Registrar, whose task was more arduous than that of any other officer; and it sometimes became a wonder how any man could take upon himself duties so multifarious, and requiring so much judgment and tact, without any remuneration. The Treasurer intimated at the morning sitting that the Association had a very handsome balance at the bank and actually invested, and as the time seemed to be approaching when the Association would "flourish like a green bay tree," he thought the officers should receive a handsome

honorarium. He said that entirely without prejudice—(laughter)—because it might be thought by some that he had a personal feeling in the matter, though he assured members that no such idea had entered his head. He thought the Association could congratulate itself on having the very best set of officers possessed by any organisation, and he was sure his hearers would unite in according them a very hearty vote of thanks.

Dr. BLANDFORD said he had very great pleasure in seconding the motion. He could echo everything which Dr. Mercier had said concerning the abilities of the Association's officers, especially that in reference to Dr. Jones, who was going out of office, while the others remained in theirs. He need not describe the admirable manner in which Dr. Jones had conducted the business of the Association during the past year. Members had seen him at those meetings for a great number of years, and he hoped they would continue to do so for a great many more. (Applause.)

The vote was carried by acclamation.

Dr. ROBERT JONES, in acknowledging the vote, said it was a day of mingled feelings for him, as he severed his official connection with the Association that afternoon. Dr. Mercier, with his usual skill and tact, had already carved out for himself a nice honorarium. He was fore-shadowed into office, and he (Dr. Jones) hoped he would be able to do something to get the honorarium for him. (Laughter.) He need not say that the post of president was a more or less formal office; he was only the figure-head, for the time being, of the Association. He had been secretary, and he knew the secretary was the tail which made the dog wag. He had been for one year their president, and he gratefully acknowledged that the position of president was one which was held by the suffrages of the members only. He was exceedingly grateful to the officers who had upheld the president by their work. Were it not for the gentlemen whom Dr. Mercier had mentioned—Dr. Bond, to whom he was under many obligations, and the Registrar, whose responsibilities were exacting and onerous—the office of president would be a very difficult one to fill. He thanked Dr. Mercier for the very kindly and affectionate way in which he had referred to the president's duties. The year just closed had been a successful one. Their membership had never been higher, and they had had a paper which had filled every chair in the room—Dr. Ford Robertson's—which was an epoch-making contribution to their annals. There was an old Welsh proverb which said that the man with the golden tongue had many friends. He wished he had the golden tongue in order to speak adequately of his successor, Dr. MacDonald, but he was not in need of any commendation from him, he was so well known and had been unanimously accepted. He was known to be a self-reliant man, he had the affairs of the Association intimately in his mind, and he also had them at heart. They knew his value on committees, and he had great pleasure in inducing him to the chair. The work done in the committees of the Association was the muscles which moved the skeleton, and the work so done was very onerous, as the Treasurer, who had passed through the chair, well knew, and to him also he was under constant obligation for advice and help. In relinquishing the office of president he had much pleasure in thanking Drs. Mercier and Blandford and the whole of the Association.

The Chair was then occupied by Dr. P. W. MACDONALD, who delivered his presidential address.

Dr. G. H. SAVAGE said the present was nearly the fortieth address which he had heard at meetings of the Association, and he could certainly say he had never heard a more eloquent or a more impassioned address. One believed that the new President felt what he said, and felt deeply. It was not permitted to him (Dr. Savage), or to others, to criticise that address. It was for him "not to bury him, but to praise him" if he could—and he could. Dr. MacDonald first touched gently on the losses to the Society; the obituary references had been in the very best of taste. In the next place, he (Dr. Savage) could not help thinking of the book recent published by Sir Frederick Treves, *Highways and Byways of Dorset*. One felt that they had been studied by Treves in one way, and by the President in another; and that if houses were to be built well and firmly, the bricks and stones must be good and sound; that if there were to be good principles evolved from their observations they must have true observation—narrowed perhaps, specialised into small areas. It was of the utmost importance that men like the President

should give their experience. And when one heard him speak as strongly as he had done, one fancied that, if his views got disseminated far and wide, he might suffer as some of the doctors did who wrote in the *Lancet* about teetotalism. Their lives were rendered, for a time, rather unhappy by virtue of the number of pamphlets they received on the question, setting forth the vices of alcohol. He felt very strongly, with the President, that alcohol was not the great cause, in the present day at all events, of any increase of insanity. (Hear, hear.) He was glad the President referred so markedly to what was said by the Irish Commissioners. It was mentioned in the report of the Irish Commissioners last year that the most potent cause of the increase of insanity was the use of tea. So when one heard of alcoholism and of people being intemperate, as was pointed out some time ago, one might as well accuse a person of being a caffein maniac, or a tea maniac, as an alcohol drinker. He agreed with what the President said about heredity; he had had most ample opportunities of making careful observations, and it was not surprising that it should form such a potent factor in the development of insanity in a rural district; because there was not only the elimination of the fittest by migration and by emigration, but there was intermarriage, and the intermarriage of the degenerate. He could not agree with all the President had said about sentiment. It was all very well, but we were not yet governed by reason. It had been said we could not reason, we could only feel, as a rule, and the feeling might be right, or it might be wrong. Certainly we were more governed by sentiment than by reason. Sentiment was strong against certification, and it might die out, but it would not die out in a generation, and that fact must be accepted. It had been a great pleasure to him—and doubtless to all—to hear what the President had said, and one felt that while it might be true that the wise men came from the East, the psychologists came from the North. (Applause.)

Dr. CLOUSTON said he rose with very peculiar pleasure to second the vote of thanks which had just been proposed. It was quite certain that one always enjoyed an address when the man who made it was an enthusiast and when he was in a fighting attitude. There could be no doubt that the President had said things which there was not a man in the room would not dearly like to contradict. That was one of the advantages of an address of that kind. If Dr. Mott were present he would be boiling over with a desire to contradict the anti-syphilitic theory of general paralysis. And he saw Sir John Tuke fidgeting in his chair at the remarks in the address concerning the certification of insanity. He (Dr. Clouston) could scarcely keep his place when the President talked about the non-effects of alcohol and the bad effects of tea. All those things added enormously to the interest of the address, and when to those was added the personality of the speaker, there were perfect conditions for a perfect hour spent. He had much pleasure in seconding the vote of thanks, and he was sure all would agree that Dr. MacDonald deserved it. (Applause.)

Dr. SAVAGE put the vote to the meeting, and it was carried by acclamation.

The PRESIDENT said he was very much obliged for the kind vote of thanks. Perhaps the heartiness of his thanks was enhanced by the fact that the vote had been proposed and seconded by those gentlemen who had known so many presidents, and who were, therefore, so well able to express an opinion on the point.

Dr. EASTERBROOK then read a paper entitled "The Sanatorium Treatment of Active Insanity by Rest in Bed in the Open Air" (see p. 723).

## SECOND DAY.

### SIR WILLIAM GAIRDNER'S DECEASE.

The PRESIDENT said that before commencing the business set out on the agenda he would call upon Dr. Yellowlees.

Dr. YELLOWLEES said that at the wish and with the approval of the President he moved that the Association should follow the course which had been customary, and express their regret at the sudden death of Sir William Gairdner and their sympathy with his relatives. He was sure this would be agreeable to the Association, as Sir William was a former President. It seemed fitting that he should move that resolution, because it chanced that he was the last friend with whom



Sir William spoke. He visited him on the afternoon of his death, and found him on his couch reading. He was feeling quite well, and looked so; the pulse was calm and strong, though only 22 per minute. On parting, after a very pleasing talk, he said good-bye cordially at the hall door, sent a kindly message to a medical gathering to be held that evening, and returned to his reading. Half an hour afterwards, or thereby, the servant found him dead on his couch. There was no sign, no warning, nor any indication of the impending end; but the heart condition was very remarkable. It had been as slow on some occasions as 10 beats per minute, then it rose to 15, and then to 20 or 22, which was its usual rate.

Dr. CLOUSTON said he had a sad satisfaction in seconding the resolution. Sir William Gairdner was not so intimate a friend of his as he was of Dr. Yellowlees, but he and Dr. Clouston were two of the few students who attended the students' course before Sir William was in the Glasgow Chair. They lived in fellowship, and to live in fellowship with Sir William Gairdner was to love him.

The vote was then carried in silence.

#### CONGRESS OF NEUROLOGY IN AMSTERDAM.

Dr. ROBERT JONES said he desired to make a statement, which he ought to have made before vacating the chair on the previous day. The Medico-Psychological Association had been requested to name two delegates to represent it at the Congress at Amsterdam. He proposed that the matter should be left entirely in the hands of the President to name delegates. A certain number of members of the Association would be attending the Congress.

Dr. YELLOWLEES seconded. He said he supposed no one would go for the purpose of being a delegate, but when the President learned who was going he could name two of them.

Dr. URQUHART said that if the gentlemen who had made up their minds to go to Amsterdam would communicate with the Secretary they would obtain from the President a letter of authority to represent the Association. That had been done at several of the Societies in Scotland already.

Dr. CLOUSTON introduced a discussion on "Psychiatry as a Part of Public Medicine" (see p. 704).

Following Dr. Clouston's reply, and after the adjournment for luncheon, a resolution proposed by Dr. YELLOWLEES, and seconded by Dr. HAYES NEWINGTON, was adopted as follows: "That it be remitted by the annual meeting of the Medico-Psychological Association to the Parliamentary Committee of the Association to co-operate with the British Medical Association or with any committee of other medical associations, with a view to securing the appointment of a minister of health, with a seat in the House of Commons, or to initiate such proceedings."

Dr. ALBERT WILSON then read a paper on "The Psychology of Crime," and supplemented it with a clinical demonstration.

It was agreed, in view of the special circumstances under which Dr. McRae had attended the meeting, and Drs. Lewis Bruce and Devine consenting to their papers being held over for another meeting, to adjourn the full discussion on this paper until the November meeting, in order that Dr. Robertson's and Dr. McRae's joint paper might be included in the work overtaken.

The PRESIDENT thanked the Salvation Army for the kind way in which they had helped Dr. Wilson and contributed to the Association's edification.

Dr. DOUGLAS McRAE then read a paper, jointly by himself and Dr. Ford Robertson, entitled "Observations on the Treatment of General Paralysis and Tabes Dorsalis by Vaccines and Anti-sera" (see p. 750).

The PRESIDENT, in announcing that the end of the programme had been reached, expressed his gratitude to all who had come to support him at that meeting, which would remain in many ways a memorable meeting of the Association, largely because of the numerous attendance and the very valuable contributions which had been made by their own members. The Association was not afraid of criticisms, nor of just comparisons. They had reason to be proud of their past, and for looking forward with confidence to the future.

Dr. HAYES NEWINGTON proposed a vote of congratulation to the President on his having presided over such a successful meeting.



The PRESIDENT begged the meeting to accept his grateful thanks, and the meeting terminated.

The following members attended the Council meeting on July 25th, 1907, at 9.30 a.m.: Lewis C. Bruce, C. Hubert Bond, David Bower, James Chambers, T. S. Clouston, Maurice Craig, Th. Drapes, Alfred Ewan, E. Goodall, Robert Jones, T. W. McDowall, P. W. Macdonald, Alfred Miller, F. Hayes Newington, Conolly Norman, H. Rayner, R. Percy Smith, H. Savage, R. H. Steen, A. R. Turnbull, D. G. Thomson, A. R. Urquhart, David Yellowlees, Ernest White.

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### GIRGENTI INEBRIATE REFORMATORY.

When the Reformatory was opened some seven years ago, Dr. Carswell was convener of the Committee of the Glasgow Corporation engaged on the work of this important institution. They purchased the property of Girgenti, which is situated in Ayrshire, some twenty-one miles from the city, for £7000, and spent an additional £2000 in making the house suitable for the purpose intended. The inmates were to be selected from persons belonging to Glasgow who have been sent for trial to the Sheriff of Lanarkshire, habitual drunkards who are not criminals, who are not prostitutes, nor suffering from serious diseases. These limitations have not been entirely observed.

We are now favoured with the Sixth Annual Report for the year ended 31st December, 1906, and find that it presents features of special interest. In the Report for 1904, the Committee made suggestions for amending the Inebriates Acts—giving the magistrate as well as the sheriff power to commit drunkards; giving the magistrate powers of detention in prison or poor-house while the inebriate is awaiting trial; giving power to commit these persons to the care of the Parish Council; giving power to commit drunkards who have been chargeable as paupers four times during the preceding twelve months; giving power to the sheriff to commit drunkards who have not been police cases; and giving powers to facilitate transfers.

In spite of the reasonableness of these proposals and their favourable reception by the Secretary for Scotland, nothing has been done to pass them into law. The consequence is that the Corporation of Glasgow, last March, resolved to discontinue the Girgenti Reformatory; and they feel further justified by the reduction of the Treasury grant from 10s. 6d. to 7s. a week per inmate, although the whole cost is about 24s.

The Reformatory is licensed for 58 female inmates, and the average number resident was 42. The numbers received for the last six years were 39, 40, 39, 27, 41, and 44—showing a slight annual increase. Altogether 130 have been admitted, and of these 18 have been regarded as hysterical and explosive, 17 weak-minded, 22 periodical drunkards, and 73 ordinary chronic inebriates. Several of those licensed out have done well, and notes of 8 of these cases are presented; but the general results are as hopeless as might be expected in dealing with such a population. Dr. Cunningham reports unfavourably of atropine treatment, and directs attention to the relationship between epilepsy and inebriety.

It will be most unfortunate if this experiment is to end in failure. The Government has not encouraged the Corporation of Glasgow in their attempt to deal with the worst class of drunkards, and it is high time that a revision of methods and a national system was adopted. The kingdom of Belgium has shown what can be done in clearing the country of these waifs of society—insisting on useful work and cleanly living. Scotland should not lag behind.

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### A PRESENTATION TO AN EX-PRESIDENT.

Dr. T. Outterson Wood, who has been for many years Senior Physician to the West End Hospital for Nervous Diseases, Welbeck Street, Cavendish Square, W., has been presented with a handsome silver bowl by members of the Committee of Management and Medical Staff upon his retiring from the active staff and being appointed Consulting Physician to the institution.

## CORRESPONDENCE.

To the Editors of THE JOURNAL OF MENTAL SCIENCE.

DEAR SIRS,—May I venture to suggest that as now there are so many of our asylum trained and certificated nurses engaged in private nursing, it would be well for our Association to found an occupation bureau for them somewhat upon the same lines as the Chartered Nurses' Society was founded in connection with the nurses of the Royal British Nurses' Association which we inaugurated some time ago, and which has been such a conspicuous success.

A start has already been made in this direction by Miss Hastie, 115, Edgware Road, W., and the appointment of a small committee of management composed of members of our Association would ensure its success and its development upon right lines, while it could not fail to be a great boon to our nurses and to the public. The Mental Nurses' Co-operation would be a suitable title.

Yours faithfully,

October 3rd, 1907.

T. OUTTERSON WOOD.

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 OBITUARY.

SIR WILLIAM TENNANT GAIRDNER.

Sir William Tennant Gairdner, K.C.B., M.D., LL.D., etc., etc., Physician in Ordinary to the King in Scotland, and one of the greatest Physicians and Medical Teachers of his time, died peacefully on June 23rd, 1907, in his 83rd year.

He was for thirty-seven years Professor of Medicine in the University of Glasgow, and a clinical teacher in its Western Infirmary. His professional life was one of entire devotion and strenuous activity. He was greatest as a teacher, and was never happier than when investigating and explaining the intricacies of disease, their causes, relations, and results. His expositions, whether written or oral, were distinguished by singular lucidity of expression, by a philosophic breadth of view, and by the fine scientific spirit which—unwarped by previous conceptions and intolerant of unproved conclusions—seeks for truth, and truth alone.

He was a prolific writer, chiefly, perhaps, on cardiac and circulatory diseases, but there are few departments of medicine which have not been illumined by his pen. He was so engrossed by daily work that, with the exception of his *Clinical Medicine*, his writings were chiefly in the form of Contributions and Addresses. His lectures on Insanity, when Morrisonian Lecturer in 1879, were never fully published. His address, when President of the British Medical Association in 1888, on "The Physician as Naturalist," will not soon be forgotten.

In personal character Gairdner was a genial and cultured gentleman, with an eager open mind, a beautifully transparent and truthful nature, a warm and sympathetic heart, and a deeply religious spirit. Such a character enhanced all his attainments, gave him a wonderful influence over his students, and attracted many friends.

He was fully worthy of all the love and honour which he so abundantly received.

Of the many tributes paid him during his long life, perhaps none was more appreciated than the Presidentship of the Medico-Psychological Association in 1882. The Association has very rarely chosen a President from outside its specialty, and Gairdner deemed his appointment a great honour and a recognition of the wide view of Medicine which he had always maintained.

His death, though sudden, was not unexpected. For several years his pulse-rate had been under 28, and often much lower. He took the keenest professional interest in his own case, and often dictated reports as to his condition and feelings, which might elucidate it. His mind was clear throughout the long illness. He took all his old interest in things professional and in current events, welcomed the visits of old friends, read a great deal, and was happy in the family affection which

surrounded him and had always been his chief earthly happiness. Thus with characteristic calm acceptance he awaited his Father's will. His death was worthy of such a life. He has left a great name and a high example.

D. Y.

#### GEORGE HAROLD URMSON.

Many members of the Medico-Psychological Association will have learnt with deep regret, and with almost a sense of personal loss, of the death, on September 22nd, of Mr. G. H. Urmson, Commissioner in Lunacy, at the comparatively early age of fifty-six. He had been incapacitated from duty since last December, when he underwent a severe abdominal operation; but for several months, during which he bore his trial with characteristic fortitude and cheerfulness, there was reason to hope that he might eventually be restored to health and usefulness. In the summer he was able to spend a month in Switzerland, whence he returned unhappily not improved. Shortly after his return graver symptoms appeared, and he rapidly lost strength, so as to be unable to be removed to his home at Limsfield from St. Leonard's, where he died.

Harold Urmson was the son of the late Mr. George Urmson, and was born at Canton. He was educated at Eton and Christ Church, Oxford, where he achieved distinction as an athlete, becoming President of the University Athletic Club. He graduated with First Class Honours in the Jurisprudence School, entered the Inner Temple, and was called to the Bar in 1877. In 1889 he was appointed Secretary to the Lunacy Commission in succession to Mr. Spencer Perceval, who had filled that office for seventeen years. The changes in administration due to the passage of the Lunacy Acts of 1890 and 1891 must have entailed on the new Secretary much laborious work, besides enabling him to become fully conversant with the somewhat intricate working of the Acts. The death of Mr. C. P. Phillips in 1895 created a vacancy on the Board, which was filled by Mr. Urmson's well-earned promotion, and for the past few years he has been the senior legal Commissioner.

His charming personality and generous disposition rendered him peculiarly fitted for his office, the duties of which he performed so well and so unselfishly, taking a keen interest in the welfare and treatment of the patients, many of whom will sadly miss his helpful and encouraging counsel. The Commission can ill afford to lose him at a juncture when, as is probable, new and wider spheres of duty may be imposed on it, for which his experience and judgment would have been invaluable. But above all his colleagues will feel deeply the loss of one who invariably showed such keen and practical interest in the work of their department, and who was, moreover, a man of high principle and a true and loyal friend.

S. C.

#### PAUL MÖBIUS.

In the *Psychiatrisch-Neurologische Wochenschrift*, Nr. 43, 1907, there is a heartfelt notice of Dr. Paul Julius Möbius, who died in the beginning of this year of affection of the heart and kidneys. Born in Leipzig in 1853, after studying theology for some sessions he turned to natural history and medicine. He became Doctor of Philosophy at Marburg, and took the degree of Doctor of Medicine at Leipzig. After spending several years as a military surgeon, he settled in his native city in 1883, devoting himself mainly to nervous diseases. He married the daughter of a Leipzig professor, but the union ended in a separation. His wife died in 1902. Though not connected with any lunatic asylum, Dr. Möbius became the most popular writer on subjects relating to nervous affections in Germany. This was owing to the breadth of his culture, the force of his style, the originality of his views and his choice of subjects. In his religious, devout, and ideal vein of thought Möbius bore a resemblance to his teacher, Fechner. This was shown in his essays on religion, metaphysics, and psychology. Möbius detested materialism; his biographer tells us that in his last illness he felt assured that he was going to the realm of souls, and that what constituted our essence would again be found in the heart of the world. The hope of a blessed life with God gave him a full consolation in his departure, yet he forbade the ministration of any

clergymen at his funeral. Breaking away from the isolation in which psychiatry had got, he brought his knowledge of neurology and philosophy to bear on one subject. His division of nervous diseases into exogenous and endogenous was given for the first time in his *Abriss der Lehre von den Nervenkrankheiten*, 1893, and excited some controversy. His literary activity was incessant. Among his contributions may be mentioned works on the Diagnosis of Nervous Diseases, Megrin, Basedow's Disease, Tabes, and Headache. His studies upon the pathological aspect of men of genius, as Rousseau, Goethe, and Schopenhauer, and his essays on art and artists and on the aptitude for mathematics made his name known to general readers. His work on the physiological weakness of women, which was reviewed in this JOURNAL, has come to the eighth edition.

This pamphlet, which excited lively recriminations, was followed by some measurements of female heads, showing that they were smaller than male heads. Keeping up his polemic, Möbius wrote another treatise on the differences between the sexes in twelve numbers (*Beiträge zur Lehre von den Geschlechtsunterschieden*). He also published, anonymously, a Kalender for good and naughty ladies, which was, we suppose, of a humorous character.

The following passage will give an idea of the wideness of his views: "If the alienist will rightly fulfil his mission, no domain of mental life must be strange to him. He must know the bounds of mental health, as those who profess to give attention to hygiene must know the condition of bodily health. Psychiatry, so comprehended, will become the ruler instead of the servant, the psychiatrist will become the judge in all human affairs, the teacher of the jurist and the theologian, and a guide to the historian.

WILLIAM W. IRELAND.

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#### APPOINTMENTS.

Dr. Norman Lavers, M.D.Brux., M.R.C.S., L.R.C.P.Lond., Medical Superintendent of the Canterbury City Asylum, has been appointed Physician Superintendent of Bailbrook House, Bath.

Dr. Ernest F. Sall, M.R.C.S.Eng., L.R.C.P.Lond., has been appointed Medical Superintendent of the Canterbury Borough Asylum.

Sammon, W. D., L.R.C.P. and S.I., Clinical Assistant to the Richmond District Asylum, Dublin.

Riggall, Robert Marmaduke, L.R.C.P., etc., third Assistant Medical Officer to the Devon County Asylum, Exminster.

Smith, Charles Mollison, M.B., Ch.B.Aberd., Junior Assistant Medical Officer at the County Asylum, Prestwich, Manchester.

Allen, L. L., M.R.C.L., L.R.C.P., Junior Medical Officer in the Lunacy Department, New South Wales.

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#### NOTICES OF MEETINGS.

*Quarterly Meeting.*—The next Quarterly Meeting will be held in London on Tuesday, November 19th, and the following Meeting on Tuesday, February 18th (Provisional).





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